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ORIGINAL ARTICLES

THE PRESENT STATUS OF THE EFFECT OF ORGAN EXTRACTS ON THE CONTROL OF BLOOD PRESSURE*

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I WISH first to express my sincere appreciation of the honor conferred upon me by an invitation to address this Society tonight, not only for myself but for my various co-workers and collaborators. The day of individual research is fast passing, and results to-day are usually obtained by the closest kind of team-work. In this I have been singularly blessed.

My first co-worker, Dr. A. B. Whytock, who was associated with me in my practice, rendered great assistance during the first stage of this investigation. It was he who reviewed with me much of the literature, who assisted me in the preparation of the first extracts of the liver in my own laboratory, and who with me first tested their toxicity by intravenous injections in cats.

To the staff of Western Ontario Medical School, and especially to Doctors James and Laughton, I wish to express my appreciation for the facilities afforded me in London. During the month of October, 1924, Dr. James and Dr. Laughton collaborated with me in a research on Carcinoma. During this period I had conversation with Dr. James in which he related his personal experience of the previous January, when he found that with an extract of the liver he could reduce to normal in a shorter time than usual, hypertension in the rabbit produced by epinephrin and other pressor substances.

It is now almost a year since Dr. Mullin of Hamilton gave his first assistance, and his help since that time has been on many occasions very valuable. A little later the McGregor-Mowbray Clinic of Hamilton placed at my disposal their research laboratories including their full-time biochemist, Mr. W. M. McDonald, and here much of the earlier hard work was carried on. To those clinicians who assisted so well with the clinical tests, Doctors Tice, Park, McGhie, Farmer and Bertram, I am very grateful. Mr. F. F. Dalley of Hamilton, who has always been interested in medical research, supplied the funds for a part of this early investigation, thereby rendering very material assistance.

*Address delivered before the Suffolk District Medical Society, Boston, Mass., January 6, 1926.

To Dr. John R. Williams of Rochester I am deeply indebted for his timely advice in the early stages of this investigation, and also for his assistance in making clinical observations which have been of great value.

Since going to the University of Toronto I have received on every hand the heartiest coöperation. Professor Macleod of the Department of Physiology, with his wide experience in the field of research, has rendered invaluable assistance. He has now supplied two Fellows in Physiology, Mr. I. L. Chaikoff and Mr. Ross White who are associated with me in a study of the physiological effects produced in laboratory animals by the extract. Professor Fitzgerald, Director of the Connaught Laboratories, has undertaken with the assistance of Doctors C. H. Best, D. A. Scott and Mr. K. L. McAlpine to manufacture, purify and supply a sufficient quantity for us to carry on our physiological investigation.

To each of these gentlemen I wish once again to express my sincere appreciation for their encouragement and incentive to carry on during a long and somewhat trying period.

At the May meeting of the Ontario Medical Association presented a summary of clinical results obtained in a series of thirty-three test cases of Arterial Hypertension, treated by extract of the liver[1].

It has for a long time been a matter of common knowledge that extracts of many internal gland tissues, exert a powerful though temporary depressor action. As far back as 1891 Heidenheim[2] records the results of successful blood pressure lowering experiments with extracts from the following bodies:—muscle of crayfish, heads and bodies of leeches, bodies of mussels, gut and liver of dogs, peptone and egg albumen. In 1895 Oliver and Schafer[3] found that watery or glycerine extracts of the thyroid and the spleen markedly decreased blood pressure. Halliburton[4] in 1900 demonstrated that saline extracts of nervous tissue gave a fall in blood pressure when injected into the vein of normal animals. Osborn and Vincent[5] also in 1900 found that extracts of nervous tissue produced a fall

in blood pressure, and that the depressor substance was soluble in normal salt solution, alcohol and ether. Bayliss and Starling[6] observed that acid extracts of mucous membrane and muscle tissue contained a substance which caused a fall in blood pressure. Vincent and Sheen[7] in 1903 prepared extract of the spleen, muscle, intestine and nervous tissue. On intravenous injection the effect observed was a moderate temporary rise followed by a fall in pressure. Boiling tended to destroy the pressor substance.

In 1909 Bingel and Strauss[8] found that a saline extract of the liver, testis, pancreas and brain always gave a fall in blood pressure. Popielski[9] in 1909 made blood pressure observations with extracts from the intestine, brain, pancreas and thymus of cats and dogs and concluded that they contained a depressor substance which he termed *vaso-dilatin*.

Miller and Miller[10] in 1911-12 prepared extracts from the parathyroid, thymus, cerebrum, cerebellum, spinal cord, liver, kidney, pancreas, prostate, ovary and testis and invariably found that the intravenous injection into dogs produced a temporary fall in blood pressure. Abel and Kubota[11] in 1919 extracted from the liver of a dog a very powerful depressor substance. The liver was cut into small pieces and boiled for fifteen minutes and the extract purified by means of mercuric chloride, phosphotungstic acid and chloroform, and when injected into a cat caused a marked fall in blood pressure. They concluded the active principle was histamine.

The present study of the effect of organ extracts on blood pressure is the result of an observation made during the course of a clinical study on Carcinoma. An article by Killian and Kast[12] had been read with much interest. In this they showed that in eighty per cent of cases of internal carcinoma there is a definite increase of uric acid in the blood. A short time later I read with equal interest the exhaustive study of Mann and Magath[13] on the effect of total removal of the liver in the dog. One of their outstanding observations was that blood uric acid mounted steadily until death. The idea occurred that if blood uric acid is present in excess in carcinoma, and if it is also present in excess in the hepatectomized dog, the liver may contain or secrete some substance which controls uric acid in the blood. The idea also occurred that this uricacidemia may be the medium in which malignancy will flourish, and being caused by the absence of some substance contained in the liver, or an internal liver secretion, that if this substance or secretion could be recovered for therapeutic use, the medium in which the carcinoma is growing may become unfavorable and malignancy therefore partially controlled.

In order to test this idea clinically I chose two malignancies, one a man of fifty-six with carcinoma of the pancreas, and the other a young man of thirty-eight with an inoperable retroperitoneal growth. Daily subcutaneous injections of an extract of the liver were commenced in the early part of November, 1924, on the first case—pancreatic carcinoma. In the second case—retroperitoneal growth—treatment was commenced on December 6th, 1924.

In December I had drawn to my attention a paper by Fishberg[14] in which he observed that essential arterial hypertension is usually accompanied by an increase of uric acid in the blood, and that there is frequently no tendency to subsequent retention of urea in the blood, and no development of uraemia. These cases in which the uric acid content of the blood is high, he says, are shown to suffer from the direct consequences of circulatory strain such as myocardial insufficiency. He believes that primary uricacidemia is the result of some metabolic change which is fundamental, and can only be controlled by the correction of this change in metabolism. Fishberg's observations were entirely new to me. I was at the time using a liver extract in an endeavor to reduce blood uric acid in a case of carcinoma; Fishberg's paper dealt with hyperuricaemia in hypertension; in the above mentioned case treated with the extract I had noticed a fall in blood pressure, and accordingly tried to reduce in hypertension, the hyperuricaemia I was trying to reduce in carcinoma. The first clinical test of liver extract in hypertension was made on December 18th, 1924, and the results obtained were so encouraging as to invite observation in further cases. The second case was commenced on December 25th. Here also positive results were obtained. Since these preliminary tests were suggestive, I decided to use the material on individuals known to be suffering from persistent and longstanding hypertension, and observations were accordingly made on thirty-three hypertension patients, carefully chosen to include only the essential cases. At this stage no case showing evidence of any renal or cardiac involvement was accepted. In this clinical investigation I had associated with me six collaborators who each made their independent observations and whose results are included in the thirty-three cases reported.

As the effect of liver extract upon blood pressure was first observed clinically in the course of a study of an entirely different hypothesis, it became necessary to at once initiate a series of animal experiments to ascertain its physiological action, to purify the product, and to assay the dosage. When this experimental work was undertaken, I was joined by Dr. T. C. Burnett, associate professor of physiology in the University of California, and together we have carried on these further investigations in the laboratory of Professor J. J. R. Macleod, Departmen of Physiology, University of Toronto. This work is naturally slow in development. The

problems to be solved are many, and the different phases are in the hands of various collaborators.

In the preliminary experiments various anaesthetics were used, urethane, morphine, ether and barbitone among others. We have found ether and barbitone the most satisfactory in the dog. Barbitone in the dog produces a perfectly even anaesthesia, and is free from many of the drawbacks of the others. The most satisfactory method of administration we have found to be .25 gram per kilo, dissolved in half saturated solution sodium carbonate and injected intraperitoneally at body temperature. This will produce an exceedingly even anaesthesia lasting from eight to twelve hours. If found necessary to repeat at the end of that time, one half the dose will suffice.

Rabbits were chosen for our first experiments and in this preliminary series twenty-eight observations were made. In all these rabbits, Urethane Anaesthesia—25 per cent solution, 5 c.c. per kilo body weight injected intraperitoneally—was used exclusively. The extract was in a crude state, and all injections were given in the jugular vein. We had at that time no method of assaying the dosage, consequently many overdoses were given with a resulting reduction in blood pressure to zero, and death of the animal. All kymographic records of the variations of blood pressure in the carotid artery have been taken by means of the mercury manometer, and may be summarized as follows:—

Protocols with urethane alone:

1. *Group A.* In twenty-one rabbits the pressure gradually fell to zero, and the animal died in an average of two hours and ten minutes.
2. *Group B.* In five cases there was an average fall of 35 mm., the average pressure at commencement being 105 mm., and in three hours and forty minutes 70 mm. when the experiment was stopped.
3. *Group C.* In two cases there was no appreciable alteration. There was a slight primary fall which quickly recovered, and in an average of three hours and ten minutes the pressures were the same as at commencement, 95 mm.

All experiments on rabbits have now been discontinued because of their unreliability. Although it is realized that the observations on rabbits are intrinsically not of real value, they were nevertheless most useful in the early stages of this investigation since they demonstrated that the depressor substance of the extract acts on the normal blood pressure as well as in hypertension. This indicated that its effect on laboratory animals could furnish a basis for its assay.

Our results in dogs have been more uniformly satisfactory. The anaesthesia was more constant, barbitone being used exclusively in the first series. The position of the dog had little or no effect on the results, the extract was used in a much purer form, and the majority of injections were given subcutaneously. In the first series thirty-five dogs were used, and in only two did an overdose result in death.

Experiments with barbitone alone:—

1. *Group A.* In two dogs the pressure gradually fell until the animal died, the average time before death being four hours and nineteen minutes.
2. *Group B.* In twenty-nine dogs having an average pressure of 124 mm. there was an average fall of 36 mm. in six hours and ten minutes.
3. *Group C.* In four dogs there was no appreciable alteration. There was a slight primary decline which however quickly recovered and in an average of five hours and thirty-five minutes the pressures averaged the same as at commencement, 125 mm.

Although the extract in the following experiment was given intravenously, the details are given since they illustrate the immediate fall in blood pressure, as well as a more prolonged fall which only occasionally occurs following intravenous injection.

TYPICAL DOG EXPERIMENT—ETHER—BARBITONE—EXTRACT

June 25, 1925. Dog No. 8. Series "A." Male. 20 Kilos.

Ether for inserting carotid canula.
Barbitone .25 grams per kilo intraperitoneally.

	Time	B. P.	
	9:15 A. M.	144	
	9:45	142	
	10:06	142	2 c.c. extract intravenously
	10:08	70	
	10:15	100	
	10:36	132	
	10:56	128	2 c.c. extract intravenously
	10:59	36	
	11:20	92	
	11:40	100	
	11:42	100	2 c.c. extract intravenously
	11:45	40	
	12:37 P. M.	104	
	2:00	120	2 c.c. extract intravenously
	2:03	52	
	2:20	80	
	2:33	88	
	4:10	92	
	5:30	96	
	6:00	98	
	10:12	100	.125 grams barbitone per kilo injected intraperitoneally
	11:10	82	
June 26	12:20 A. M.	84	
	3:30	88	
	5:00	84	
	8:15	84	At this time the dog was in good condition and was destroyed.

TYPICAL DOG EXPERIMENT—ETHER—EXTRACT

Nov. 17, 1925. Dog No. 11. Series "B." Male. 13 Kilos. Ether.

	Time	B. P.	Extract I. T. M.
	1:15 P. M.	134	
	1:30	132	
	1:50	136	2 c.c. extract intramuscularly
	2:30	126	
	3:00	120	
	4:00	102	
Nov. 18	9:13 A. M.	106	2 c.c. extract intramuscularly
	9:30	98	
	10:05	98	
	10:40	96	
	11:40	96	
	12:50	74	

we may obtain the prolonged fall observed from the administration of extract of the liver.

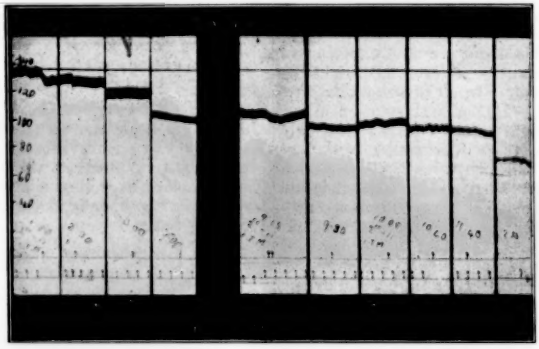
Witte Peptone administered intravenously in two dogs also caused a fall in the same manner as the extract.

1. Effect of extract administered intravenously.

   There is an immediate perpendicular drop in blood pressure with usually a complete recovery in from one half to two minutes.

2. Effect of extract administered intramuscularly.

   The fall in blood pressure commences in from three to ten minutes with recovery in from one to several hours.



Showing effect of extract on same dog on two consecutive days. Intramuscular injection given each day.

Our experiments with cats under ether have been very satisfactory. In the last series twenty-seven were used with an almost uniform fall in pressure.

TYPICAL CAT EXPERIMENT

Nov. 19, 1925. Cat No. 21. Ether. Extract.

Time	B. P.	
12:15 P. M.	124	
12:30	128	
12:38	130	1 c.c. extract intramuscularly
1:05	126	
1:25	114	
1:46	92	
2:45	76	
3:50	84	
4:50	74	Cat destroyed

One important problem to be solved was whether this depressor substance was confined to the liver, or was also present in other tissues. Extracts were accordingly made from the kidney, pancreas, thymus, spleen, lung, heart and blood. On intravenous injection of these extracts there was observed an immediate fall in blood pressure followed by prompt return to the normal. A series of experiments is now under way to ascertain whether with any of these extracts

3. Effect on kidney volume.

   Kidney volume tracings follow very closely the variations of blood pressure.

4. Effect on uterus horn of virgin guinea pig.

   The horn of the uterus of a virgin guinea pig was suspended in a Fleisch solution. The presence of .002 c.c. of the extract in 30 c.c. of solution caused a marked contraction. Using as a standard that amount of histamine which gave a sub maximal contraction of the uterus horn, an attempt was made to assay the extract. We found on repeated occasions that 1 mg. of histamine was equivalent to 1 c.c. of the particular batch of extract used for this determination.

5. Effect on heart.

   The rabbit's heart was perfused by Locke's method in which 100 c.c. of perfusion fluid were made to circulate repeatedly through the heart. The extract is not toxic to the heart in the concentration of 0.2 c.c. in 100 c.c. of the perfusion fluid. Immediately following the injection of this amount of extract there is an increase in the rate

and amplitude of the heart beat accompanied by a marked decrease in the coronary outflow. The beat then becomes slow and irregular, due probably to a constriction of the coronary arterioles leading to an insufficient supply of perfusing fluid to the heart tissue itself. This is not a prolonged effect, the heart recovering from 10 to 30 minutes after injection of the extract. The coronary outflow at this time also increases, and the heart seems to beat normally in spite of the fact that the extract is still present in the perfusion fluid.

Histamine when injected in the concentration of 0.2 mg. in 100 c.c. of perfusion fluid brings about similar changes in the heart, namely, an immediate increase in the rate and amplitude of the beat, a decrease in the coronary outflow, and later a slowing of the beat from which the heart

Extract			*Histamine*		
0.2 c.c. in 100 c.c. of perfusion fluid			0.2 mg. in 100 c.c. of perfusion fluid		
Time	Rate	Flow	Time	Rate	Flow
10:00	100	6 c.c.	12:20	88	7 c.c.
10:00	0.2 c.c. extract		12:24	0.2 mg. hista-	
10:03	140	1 c.c.	12:26	146	[mine
10:05	78	1 c.c.	12:27	140	2 c.c.
10:07	72	1 c.c.	12:28	100	2 c.c.
10:10	40		12:30	44	2 c.c.
10:15	78	4 c.c.	12:33	70	4 c.c.
10:20	120	6 c.c.	12:53	132	7 c.c.
10:30	120	8 c.c.	1:05	130	7 c.c.
10:45	125	6 c.c.	2:20	120	6 c.c.
11:25	120	8 c.c.			

recovers. The effect of the extract on the isolated loop of intestine is quite marked. The injection of 0.05 c.c. of the extract into 30 c.c. of Locke's solution surrounding the loop of intestine causes a slight decrease followed by a marked increase in both tone and rhythmic contractions of the intestine. With 0.25 mg. of histamine somewhat similar effects are produced except that the decreased tonus and rhythmic contractions immediately following the injection of the extract is entirely absent.

6. Lethal effects.

The lethal dose of the extract has been studied on the rabbit, cat, guinea pig and mouse, and appears to be in direct proportion to the amount administered and the weight of the animal. To illustrate:—*Intravenous injection.* The saphenous vein of a guinea pig was carefully dissected out and .2 c.c. of extract injected. Convulsive movements immediately set in accompanied by increased respirations and gasping. There was marked difficulty in breathing. Three minutes after the injection the animal died. Post mortem examination showed no abnormality of the heart. There appeared to be some congestion in the splanchnic area and the lungs showed evidence of distension when compared with a normal guinea pig killed as a control. Another guinea pig weighing the same as the first was injected with .25 mg. histamine intravenously. Convulsions and gasping followed and the symptoms of the first guinea pig, as far as we could judge with the naked eye, were exactly reproduced, the animal dying in the same time. Post mortem appearances were similar.

Intramuscular injection. A rabbit weighing two kilos was given an injection of 1 c.c. in the muscle at 11 o'clock and at 12 o'clock two more c.c.'s were administered in the same manner. The animal died at 2:30 P. M. Loss of control of the hind legs became apparent approximately one hour before death. Post mortem examination showed no abnormality in any organ. A guinea pig weighing 450 grams was injected with .2 c.c. of extract subcutaneously at 10 A. M. and at 11 A. M. it was given a subsequent .4 c.c.'s. Thirty-five minutes later the animal showed evidence of oncoming loss of control of the hind legs. It was found dead the next morning. The lethal dose can be definitely established.

A study of the independent effects of extract, of histamine, of cholin and of histamine and cholin combined, in the presence of ether, were made on a series of eight rabbits. That is to say, the eight rabbits were divided into four pairs, and each pair put under ether anaesthesia. After being deeply anaesthetized for fifteen minutes the first pair were injected subcutaneously with 2 c.c. of the extract; the second pair subcutaneously with 1 mg. of histamine; the third pair with .1 gram of cholin and the fourth pair with a combined dose of 1 mg. histamine and .1 gram cholin. Following these injections the rabbits were kept profoundly under ether for one hour. No ill results developed and the following day the experimeent was repeated on the same animals. Again no ill results appeared, and we consequently feel the toxicity is not increased in the presence of ether anaesthesia.

7. Effects on skin.

When rubbed into the skin, the extract produces a definite weal, somewhat round in outline and not differing from that produced by histamine.

8. Anaphylaxis.

On three successive days four white mice, one white rat and one rabbit received subcutaneous injections of the extract. They received respectively .05 c.c., .3 c.c. and 1 c.c. Seven days later they were again injected. None of the animals showed any visible change. In still another ten days the rat was again injected. No effect was

produced and the animals are still alive and normal.

9. Methods of Assay.

Two methods are used to assay the extract, both based on its comparative action with histamine. In the first method employed, advantage is taken of the fact that the intravenous injection of the extract in the etherized cat produces an initial fall in the blood pressure which can be compared in magnitude with a similar fall when histamine is injected intravenously. In the second method, suggested by Dr. C. H. Best, the effect of the extract on the isolated horn of the uterus of a virgin guinea pig is compared with that of histamine. We have chosen as the unit of extract that amount which on intravenous injection will produce an initial fall in blood pressure in an etherized cat equivalent to that produced by 1 mg. of histamine.

Comparison of the Initial Fall Produced by Liver Extract and by Histamine in Etherized Cats in Which Vagi Were Cut

Date	Histamine Dose mg.	Histamine Fall mm.	Extract Dose c.c.	Extract Fall mm.	Extract	Extract equivalent of 1 mg. Histamine
Oct. 2	.01	15.			No. 12	1 c.c.
	.01	15.	.01	16.5		
			.01	14.5		
			.01	17.		
Oct. 5	.001	7.	.0025	9.	No. 12	2.5 c.c.
	.001	7.	.0025	8.		
Oct. 5	.001	8.	.002	8.	No. 12	2 c.c.
	.001	9.	.002	7.		
	.001	8.	.002	6.		
Oct. 6	.001	19.5	.005	19.5	No. 12	5 c.c.
	.001	24.5	.005	17.5		
Oct. 6	.005	6.	.005	4.	No. 12	1 c.c.
Oct. 14	.04	24.	.05	17.5	No. 12	1 c.c.

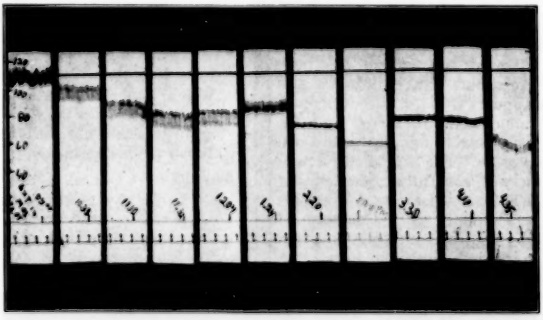
Frequent chemical analysis by Scott, Best and McAlpine having definitely proven the presence of both histamine and cholin, a series of experiments was undertaken to ascertain on animals under ether the effect of these two substances both singly and in combination. On intravenous injection in rabbits, cats and dogs, both histamine and cholin show results which are both uniform and constant. In each there is a sudden perpendicular drop with recovery to above normal in from one-half to two minutes, depending on the amount injected, and the rate of injection. On injection of a combination of the two, the fall is slightly greater. In less than two minutes the pressure is usually back to a level higher than the point where the injection was given, and in no instance has there been a subsequent fall.

The effect intramuscularly is somewhat different. With both histamine and cholin the pressure begins to fall within three to seven minutes, and with each it returns to the normal level in less than half an hour. The effect of the two in combination produces a fall commencing in from three to five minutes which reaches its maximum in approximately an hour, and returns to the original level in from two to two and a half hours. The maximum fall is much greater than the combined effect of the two administered separately.

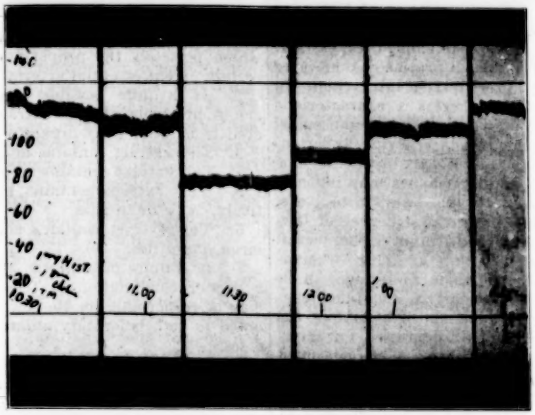
Typical Cat Experiment—Ether—Histamine+Cholin

Nov. 18, 1925. Cat No. 17. Ether. Histamine+Cholin. I. T. M.

Time	B. P.	
10:00 A. M.	114	
10:15	114	
10:30	116	Histamine 1 mg. } Intramus- Cholin .1 gm. } cularly
11:00	106	
11:30	76	
12:00	104	
1:00 P. M.	104	
1:15	118	



Effect of extract intramuscularly on the etherized cat.



Illustrating the combined effect of histamine and cholin given intramuscularly. Pressure returns to original level in less than three hours.

On the suggestion of Dr. H. H. Dale of the National Research Council of London, England, a few experiments have been made to ascertain the combined effect of histamine and cholin clinically. Three of our clinical test cases, those in whom we had previously produced by the extract a definite fall in pressure, were chosen. The nature of the experiment, and its objects were explained to them and their consent obtained. Many times the amount of these two substances contained in the extract was used, and the following observation made:

Cases tested—3.

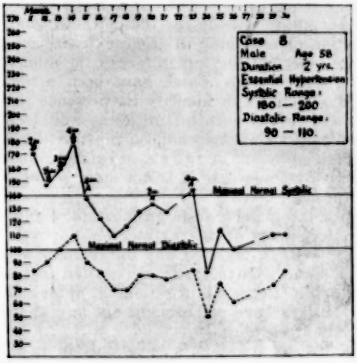
Average systolic before liver extract	192
Average systolic after liver extract	135
Average fall after liver extract	57
Average diastolic before liver extract	106
Average diastolic after liver extract	94
Average fall after liver extract	12

Two of these patients had received no liver extract for several months and their pressures were consequently back to the original level. The other two had received more recent treatment.

Average systolic before histamine and cholin	174
Average systolic after histamine and cholin	183
Average rise after histamine and cholin	9
Average diastolic before histamine and cholin	104
Average diastolic after histamine and cholin	105
Average rise after histamine and cholin	1

It will thus be seen that whereas following administration of the extract there was in the systolic pressures, an average fall of 57 mm., there was with a combintion of histamine and cholin an actual rise of 9 mm. on the average. In the diastolic pressures a 12 mm. fall following the extract became a rise of one mm. on the average following a combination of histamine and cholin.

The pharmacological effects of the extract, and of solutions of histamine are as nearly as can be judged, practically the same. This is most evident in their action on arterial blood pressure



Illustrating the effect of the extract in clinical essential hypertension. March 11-30, 1925.

in the etherized dog and cat, and on involuntary muscle such as the uterus strip. There is also close similarity in connection with the effects on the skin reactions, the intestinal strip, the isolated mammalian heart, and, when very large doses of the extract are given, in the lethal effects. The effects on blood pressure and the uterus strip are so closely similar that it has been found convenient, for the present at least, to base the assay of the extract on its histamine-like action on the blood pressure, and so far as it has been possible to judge, the comparative ef-

fects of different extracts in terms of histamine was parallel with their therapeutic value in reducing the blood pressure in clinical test cases of hypertension. The blood pressure is however only temporarily lowered after intravenous injection of histamine, whereas a characteristic feature of the extract when given intramuscularly, is the prolonged effect in relieving hypertension. This raises the question as to whether histamine given in a similar manner may not also have a prolonged effect. In doses up to 1 mg. this is not the case, the greatest degree of lowering occurring in about 20 minutes, the normal being regained well within an hour, whereas with doses of extract, which as far as can be judged from chemical analysis, could not contain anything like this amount of histamine, the blood pressure may remain depressed for several hours. This indicates that the extracts must contain other depressor substances which assist the histamine effect. As a matter of fact cholin was early recognized as a constituent of the extract, and it is possible that other amines are present as well. In any case there seems to be sufficient evidence to show that although the extracts give histamine-like effects on laboratory animals which run parallel with their therapeutic action in hypertension, there is some other depressor substance present to which their main clinical value is due. It is recognized that the chemical methods for the detection and estimation of histamine in organ extracts are not entirely dependable, but in face of the numerous unsuccessful trials which have been made by various methods to identify its presence in the extracts, in any such quantities as would cause a prolonged lowering of blood pressure, such as is obtained by one or two c.c. of extract, it seems safe to conclude that it is not mainly responsible for the effects.

Both the toxicity tests on laboratory animals and the effects of the extract on the isolated heart have not revealed any unfavorable action which would contradict their repeated injection into man. Repeated injections at intervals of several days have not brought out any anaphylactic-like reactions.

As this investigation is as yet only in an early stage it would be premature to form any definite conclusions, but I would like to summarize the work to date as follows:

SUMMARY

1. An extract of the liver has been obtained which possesses the property of reducing to a certain extent essential arterial hypertension.

2. It is quite possible—even probable—the active principle of this extract may be recovered from other body organs and tissues.

3. This extract contains no protein.

4. This extract contains no peptone.

5. This extract contains histamine in relatively small quantities.

6. This extract contains cholin in relatively large quantities.

7. It is quite possible the effect produced by a proper combination of these two substances may be responsible for the lowering of pressures noted in both laboratory animals and in clinical cases.

8. It is more probable, however, that because of the much greater effect produced by a given quantity of the extract, than can possibly be obtained by the injection of even many times the quantity of histamine and cholin contained in the said quantity of extract, the result is due to an unknown substance, or that this unknown substance may activate either the histamine or cholin or both.

9. Intramuscular injection is much more efficacious than intravenous.

10. The extract is much more effective in hypertensive than in normal cases.

11. We have as yet no method of determining our selection of cases for treatment.

12. Whereas our method of assaying this present extract in units is definite, we have as yet no method of determining the dosage in units to any given case.

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CANCER IN MASSACHUSETTS

By Dr. John H. Nichols, *Chairman;* Mr. Frank W. Goodhue, Dr. Merrill E. Champion, Dr. George H. Bigelow, *Secretary;*

Committee Appointed by the Departments To Make This Study

And Dr. Herbert L. Lombard, *Field Agent*

In compliance with a legislative resolve, The Departments* of Public Health and Public Welfare made an investigation in the Summer and Fall of 1925 on the cancer situation in Massachusetts. The investigation embraced a personal survey of selected cities and towns; question-

*This report is from the Departments of Public Health and Public Welfare.

naires to every physician, overseer of the poor, and hospital in the state; the publication of letters in the lay press calling attention to the investigation and requesting information and suggestions from interested persons; the investigation of the personal habits of certain cancer patients; the collection of statistical data from the original death records and other forms; a study of the pathological records of the Harvard Cancer Commission; and interviews and correspondence with persons informed on the subject. While the report of the study can be found complete in House Document No. the significant findings are here summarized.

The statistical study showed that cancer of all forms and all ages over thirty has been on the increase since 1850, and is still increasing (see Chart No. 1). The rate among females has

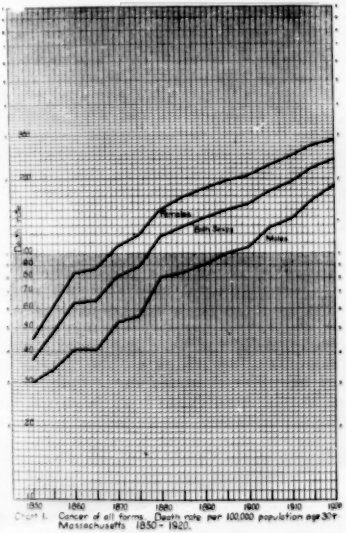


Chart 1. Cancer of all forms. Death rate per 100,000 population age 30+ Massachusetts 1850 - 1920.

been consistently higher than that among males. The male trend has been going upward at a constant rate throughout this period. The female rate, however, while still increasing, is doing so much less rapidly than formerly. There have been two apparent breaks in the trend, one in 1860 and again in 1880. There is a possibility that a third break occurred in 1915, but this cannot be positively determined for several years. The cancer rate among females is higher than among males, but the one is increasing at a rate less than the other.

When cancer rates by age groups are obtained, the change taking place in the female trend is more striking (see Chart No. 2). In the younger age groups, the trends are much less steep than in the older groups. There has been no apparent break in the trends of the age groups over sixty, but those under sixty show a decided change being less in each lower age group, until in the 30 to 39 group, the cancer

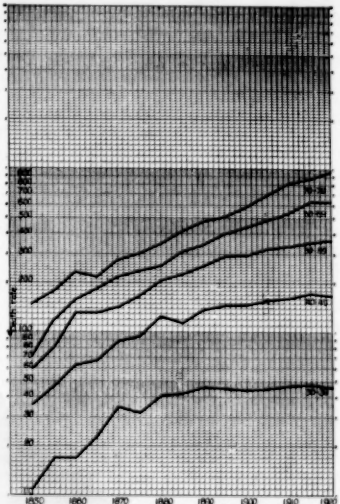


Chart 2. Cancer of all forms. Death rate per 100,000 by specific age groups among females. Massachusetts 1850 - 1920.

death rate has been practically stationary since 1890. Among the males, the flattening of the curve in the younger age groups is not marked (see Chart No. 3). There is, however, a slight indication that the 30-39 group has begun to flatten, but the other groups as yet give no indication of doing so. These findings open up a field of speculation as to the causation of this behavior of the trend. It may indicate that the maximum rate has about been reached, since a similar phenomenon has been noted in other diseases.

Massachusetts has the highest death rate from cancer of any state in the Registration Area when proper adjustments are made for age and sex. The average adjusted death rate from cancer for 1920, 1921 and 1922 for Massachusetts was 98.4 per 100,000, while for South Carolina, the state having the lowest rate, it was 48.9.

The report of deaths among public dependents in almshouses shows that the percent of public dependents who die of cancer is lower than that of the general population of the same age distribution. It is not known whether this is a real difference, and that public dependents are not as susceptible to cancer as others, or whether the overseers of the poor in towns and cities are failing to meet their share of the cancer load. In the institutions for the insane in Massachusetts, there are far fewer cancer deaths

than among the general population of the same age distribution. Again, it is not known whether this is a real difference or not. Theoretically, at least, it has been suggested that there may be something inherent in the makeup, mode of living, or institutional regime of the mental case which inhibits cancer. On the other hand there may be elements of selection in this group of cases, which if allowed for, would increase the rate.

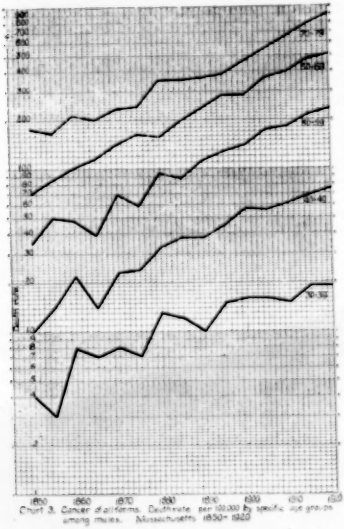


Chart 3. Cancer of all forms. Death rate per 100,000 by specific age groups among males. Massachusetts 1850-1920

Studies have been made of the duration of cancer. Operated and non-operated cases have been analyzed separately, and the operated cases have been sub-divided, showing the duration before and after operation.

The average mean duration of all types of cancer for 1921, 1922 and 1923 is 22.8 months for the operated cases, 20.0 months for the non-operated, and 19.6 months for those cases where it is not stated whether or not an operation was performed.

Operated cases live on the average nearly three months longer than the non-operated cases. If the operated cases did not include those that die as a result of operation, among which are the poor operative risks, the average duration for the survivors would be longer. Skin cancers give a greater interval in duration between the operated and the non-operated cancers than any other type, while the male genitals give the least, the duration of the non-operated cases being greater than the operated The average duration for cancer of all types, both operated and non-operated is 20.8 months.

The mean duration from the onset of the symptoms to the time of operation is 10.3 months. Skin cancers have the longest duration, with stomach and unspecified the least. It is surprising to note that cancer of the stomach comes to operation earlier than cancer of the buccal cavity, breast, and skin, all of which should be more easily recognized. The mean duration from operation to death for all forms of cancer is 9.8 months. Cancer of the breast has the longest duration, with cancer of the stomach the shortest.

In the early part of the study, it was asked whether cancer was equally distributed throughout the Commonwealth and whether certain localities were more afflicted with the disease than others. It was known that many died in Boston from cancer but as Boston is a large medical center, this did not answer the question. Accordingly, every cancer death in the years 1902, 1912, 1921, 1922 and 1923 was referred to the place of residence and classified. These were so adjusted as to represent the cancer deaths in each town and city as of the year 1915. This arrangement was necessary in order to make use of the 1915 state census which gave the population of the individual towns and cities by age distribution. A figure was then obtained for each municipality which would represent the number of cancer deaths in that municipality, if the state cancer rates for all age groups were applied to the respective groups. From these figures, an adjusted cancer death rate was obtained. Cities of varying densities of population were then grouped together and a mean density, a mean cancer rate, a median density and a median cancer rate were obtained. The logarithm of the density was plotted against the logarithm of the rate (see Chart No. 4). This shows that cancer increases in Massachusetts with the density of the population from the small rural communities to cities of a density around 4,000 per square mile, varying from around 68, in towns of an average density of 25 per square mile to around 110 in those over 4,000. From this point upward, there is no increase of cancer with density. It has been mathematically shown that from the smallest densities up to 4,000 persons per square mile, cancer follows Farr's Law.* The towns were rearranged into two groups for each density. Towns east of Worcester County comprised one section, and Worcester County and the west, the other. It is shown that for all the smaller densities, the rates in the eastern section are higher than those in the western. There is, therefore, a slight tendency for the cancer rate to decrease from the eastern to the western part of the state, but a far greater tendency for it to decrease as the density of the population de-

*_Farr's Law:_ The empirical relation discovered by William Farr between the death rate and the density of population, which is that the death rate is proportional to about the tenth root of the density.

creases. In making this study it was necessary to deal with the political units. Some towns have large areas, while most of the population is in a small congested district. Such a town would be expected to have a high rate and a low density. By grouping the towns of similar densities, this error has been lessened as far as possible. It would be advisable to make a more extensive study in which smaller units than the townships were used. If the results of such a study were found to agree with this finding, it might open up a field for further studies of the cause of cancer. To ascertain what factors are

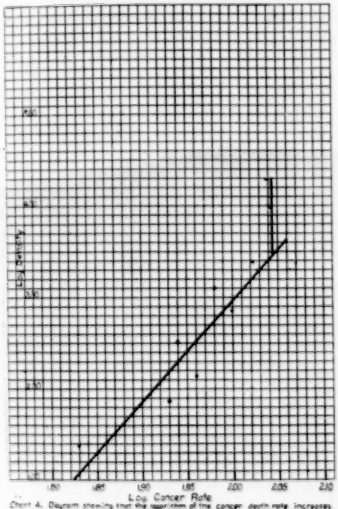


Chart 4. Diagram showing that the logarithm of the cancer death rate increases with the logarithm of the density of population up to about 4,000 per square mile. Massachusetts, 1913.

present in the least degree in small isolated communities, but increase progressively as the population becomes more dense would be a first step in this direction and might prove to be a profitable line of approach to the problem.

Death records have been thoroughly studied to determine the extent of terminal hospitalization of cancer patients. In 1912, 20 per cent of all cancer deaths occurred in hospitals; in 1923, 26 per cent, in spite of the considerable increase in the total number of cases. While the increase was not uniform, every county in the state showed improvement, and the rate of increase in terminal hospitalization for cancer cases was greater than the rate of increase in the disease itself.

In order to gain a clear idea of the facilities for handling cancer, as well as to obtain suggestions from those interested in the problem, field investigations were conducted in nineteen cities and sixteen towns throughout the state. The metropolitan area was handled as one city. These places were so chosen as to give a fair sample of the cancer situation throughout Massachusetts. An attempt was made to learn if there was a need for more beds for inoperable cancer, if the supply of radium was adequate, if good diagnostic service was available, and if the volume of inoperable cases was increased by quacks.

The survey shows that there is a great need for additional beds for cancer patients in the cities, while in the rural communities it is so slight as to be almost negligible. The average city hospital does not have a sufficient number of beds to care for chronic cases. It will admit a cancer case for diagnosis or for an operation, but when the disease is inoperable and a long period of invalidism is to be expected, the hospital is unable to retain the case because of the pressure of the acute cases. In the metropolitan area there are five hospitals where terminal cancer cases can be cared for. In ten of the cities surveyed, all the hospitals refused to admit terminal cancer. In three cities, they will care for a few. In one city, the hospital limits the stay to a six weeks' period, while in one other city, the limit is two weeks. In only three cities of the group surveyed do the hospitals freely admit cancer cases. In the four towns which had hospitals, the policy is to admit cases having no other place to go, but in one of these towns a six weeks' limit is enforced.

The need for additional beds is confined largely to the self-respecting individual of moderate means. It is very difficult for these people to obtain care commensurate with their financial status. The well-to-do are able to obtain care in either the private rooms of hospitals or in nursing homes. There are a number of nursing homes in various parts of the state where care can be obtained for $25.00 a week and over. This, however, does not include medical service, and the total cost is therefore considerably in excess of this figure. Nursing homes are of various types. Some are very good, while others are less satisfactory. None of these homes is equipped with X-ray or radium.

West of Springfield, the cancer situation seems to be far less acute than in eastern Massachusetts, and there is no apparent demand for additional beds. This can be explained by the more rural population and by the lower cancer rate in the western part of the state.

Nearly all the physicians in the cities and large towns felt that there was a far greater need for hospital beds for all chronic incurables than for cancer alone.

Radium is readily available in twelve of the nineteen cities surveyed and X-ray therapy in fourteen. Many cases are referred to Boston for these treatments. It was the almost universal opinion of physicians that patients needing radium could obtain it regardless of their finan-

cial situation. Several physicians expressed the opinion that it was not the lack of radium but rather its improper use that constituted the problem. There are ample diagnostic facilities in the larger centers which can readily serve all parts of the state. There are, however, a few physicians widely scattered, who are somewhat backward in their diagnostic and treatment methods. This applies equally to urban and rural communities. It is difficult to estimate the number of physicians belonging to this class. The percentage as furnished by physicians in the various communities ranged from 4 to 14. Simmons and Daland* reported that 14 per cent of all cases in their study received poor advice from the first physicians consulted. There is no reason to believe that the percentage in Massachusetts will differ from that found in Pennsylvania by the State Cancer Commission,† which was 10 per cent.

There are a number of quacks who are preying upon the cancer patient, promising a cure and extracting what little money he has. The number in Massachusetts is not large, according to the physicians, but a number of pathetic examples of their work has been brought to our attention.

The district nursing associations in many cities are attending many cancer cases in the homes. In the cities where hospitals do not admit terminal cases, the nurses state that they have a large cancer problem. Many individuals with cancer would be made more comfortable if more extensive nursing care were available. One physician felt that if nurses served their patients throughout the twenty-four hours, his problem would be solved. He said his patients were unable to pay for two nurses, whereas most of them could afford one. Other physicians feel that the solution is to extend the visiting nursing service. At the present time, the patient needing a hypodermic injection of morphine after six P. M. is unable to get it from the district nurses as they are not available. If sufficient nurses could be employed to have night shifts as well as day shifts, the problem would be lessened in certain places.

Of the 382 hospitals and institutions to which questionnaires were sent, replies were received from 165. About one-half of these stated that the questionnaire did not apply to them as their work was confined to some specialty and no cancer was admitted. The remaining seventy-eight furnished the information summarized in the report. Since these include the leading hospitals in the state, the information received is more significant than the number of replies indicates. The most important item is that showing that the hospitals are gradually assuming their share of the cancer load. The increase in cancer admissions in hospitals has been far more rapid than has the number of cancer deaths in the state. This is not confined to operative cases alone, but includes also the terminal cases. The hospitals, however, are not caring for the terminal cases for a sufficient length of time. Those competent to judge state that four months might be the average period necessary to constitute adequate institutional care for terminal cancer patients of all types. Computation of the number of beds needed for terminal cancer was made, using the most probable estimate for the variables which enter the calculation; namely, that 30 per cent of all cancer deaths need an average duration of four months hospitalization considering the present duration of hospitalization to be 1.5 months. This gives a need for 340 beds. Assuming that this number is adequate, the bed needs for each county have been prorated using the average cancer deaths of 1921, 1922 and 1923 as a basis.

County	Average yearly cancer deaths	Per cent of total cancer deaths	Number of beds needed	
Suffolk	1,190	25.5	87	
Bristol	375	8.1	28	
Plymouth	199	4.3	15	
Norfolk	262	5.6	19	
Essex	569	12.2	41	
Worcester	483	10.3	35	
Hampden	299	6.4	22	
Hampshire	81	1.7	6	
Nantucket Dukes Barnstable	63	1.4	5	Nantk. .4 Dukes .6 Barns. 4.0
Franklin	63	1.4	5	
Berkshire	119	2.5	9	
Middlesex	954	20.5	69	
Total	4,657	99.9	340	

Questionnaires were sent to every physician in the state and replies were received from about one-third of them. One-half of the doctors who replied had no cases in the period mentioned. Many physicians whose specialties prevented their coming in contact with cancer patients to any extent, returned the questionnaires, often accompanying them with helpful suggestions. The number of cancer cases reported as being seen by physicans (3200) was about one third of the cases computed from the statistical study of death records to be alive in any four months' interval (9300). Inasmuch as many physicians not seeing cancer patients returned questionnaires, and as one-third of the doctors replying reported one-third of the estimated cases, it is felt that the answers received from the doctors' questionnaires represent a fair sample of the conditions existing throughout the state. About 23 per cent of cancer patients, in the opinion of the physicians, will need hospitalization in the terminal stages. About one-seventh of the doctors have found difficulties in the past in obtaining this institutional care.

*Simmons, Channing C., and Daland, Ernest M.: Cancer: Delay in Its Surgical Treatment. Boston Medical and Surgical Journal, 190:15-19, January 3, 1924.

†Report of the Commission on Cancer of the State of Pennsylvania. Atlantic Medical Journal, September, 1924.

With few exceptions the doctors were able to obtain consultation service.

Four per cent of the physicians replied that they did not have ready access to X-ray and radium therapy. As many of these doctors live in cities where radium and X-ray therapy are known to be available, it is evident that in some of these cases the doctors do not make use of the hospitals furnishing the treatment, for one reason or another.

To determine the extent that cults influence cancer and make inoperable cases which might have been benefited by earlier treatment, the doctors were questioned regarding the number of their patients thus affected. The opinions varied from none to nearly all. Many thought that the cults were the last resort of the inoperable cases. While the number of physicians who felt the cults to be a menace was large, the majority were of the opinion that cults played only a very small part in the early stages of cancer, and that their influence was steadily decreasing.

Patients with cancer are not receiving treatment in the early stages of the disease. A part of this delay is due to the patient, and a part to the doctor. The average time that patients with symptoms wait before consulting a physician is eight months. This delay is found not only among the ignorant but also among those acquainted with cancer. One physician quotes the case of a nurse who concealed her cancer for two months, before she consulted a physician. Until the average time between first symptoms and initial treatment is far less than eight months, satisfactory results cannot be expected. That this interval is gradually growing less is the opinion of 82 per cent of the doctors answering this question, while 16 per cent say it is the same, and only 2 per cent say it is greater. After the diagnosis has been made, it is often difficult to convince patients that they need immediate treatment. A great many of them delay long after they have received proper advice. It is the opinion of a number of physicians who answered the questionnaire that a not inconsiderable part of the delay is due to the physician himself. Some of it is attributed to carelessness, some to ignorance and a small part to viciousness.

While the need for additional beds for cancer cases was apparent, the Committee could not agree as to the best method for meeting the situation. A part of the Committee felt that a state institution would be the ideal solution; while others were of the opinion that better results would be obtained by urging local hospitals to care for a few additional cases each.

The Committee is agreed that the state should do much more than it is doing at present to study and care for cases of cancer. It recommends that the Department of Public Health be empowered to promote the extension of existing facilities for the care of cancer patients, and the education of the public to the necessity of proper treatment.

This should include efforts directed toward the extension of local district nursing service to the end that through better care of terminal cases at home, the volume needing hospitalization may be diminished and the comfort of the patient during his last days may be enhanced through being able to remain in the home environment; it should include efforts directed toward the extension of the present diagnostic and therapeutic resources, as well as the extension of sound education and any other preventive procedures of proved value.

In addition, the Department should from time to time further any projects to this end, which it may deem to be promising.

SUMMARY

1. Cancer is on the increase, but there are indications that the peak of the cancer curve may be nearly reached.

2. Massachusetts has the highest death rate of any state in the union.

3. The proportionate mortality for cancer among inmates of almshouses and insane institutions is lower than among the general population of the same age distribution.

4. The cancer rate increases with density up to a population of about 4000 per square mile. From there it remains nearly stationary.

5. The cancer rate increases from west to east in Massachusetts.

6. The average duration of life for operated cancer cases which die of cancer is 22.8 and for non-operated cases 20.0.

7. The average duration from onset to operation is 10.3 months.

8. The average patient comes to a doctor 8 months after first noticing symptoms.

9. About one-fourth of all cancer deaths occur in hospitals, but the length of stay in hospitals is too short to be considered adequate. The hospitals are increasing their share of the cancer load.

10. There is a need for additional beds for cancer cases as well as for all chronic diseases.

11. X-ray and radium facilities are available for ambulatory cases, but in many localities they are not available for bed cases.

12. Quacks are not a large factor in the inoperable cancer problem in Massachusetts.

13. Further education of the public as to early diagnosis and treatment is necessary.

ON THE ETIOLOGY OF CONGENITAL CLUB FOOT

BY CARL BEARSE, M.D.

THE etiology of congenital club foot is still obscure. While many theories have been advanced, and many investigations made, no conclusive information has as yet been obtained. Since it seems that more evidence is necessary, the following case report is contributed.

On March 29, 1922, I operated on a woman of twenty-nine, pregnant for the first time, for a ruptured ectopic gestation. A foetus was recovered that was unusual, in that it had a single club foot. This foetus was estimated to be 14 weeks old; measured 17 cm. in length, weighed 60 grams, the toenails and fingernails were present, and its male sex recognizable.

FIG. 1. Anterior-posterior view of the club foot deformity.

Of the various theories that have been advanced, those that have to do with intra-uterine conditions have received much attention. The case cited shows that it is possible to have a club foot deformity without any intra-uterine conditions entering into it.

This specimen can be seen at the Warren Museum of the Harvard Medical School, and incidentally is the youngest specimen in their collection of club feet.

FIG. 2. External-lateral view of the club foot deformity.

FIG. 3. Internal-lateral view of the club foot deformity.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12091

MEDICAL DEPARTMENT

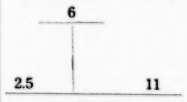
A married woman twenty-eight years old came to the Out-Patient Department Throat Room May 5, 1920, complaining of dysphagia. For three years she had had a "nervous contracture of the throat" which interfered considerably with swallowing. For the past week this had been very painful, so that she was unable to eat. For several years she had had epistaxis from occasionally to six or seven times a day. Three years before admission she had nephritis (?). She had severe headaches at that time, but had had none since. Her tongue and mouth were very sensitive to acids and her tongue was very painful and tender after taking these.

Examination showed a mass of pale tissue lying behind the arytenoid region, apparently somewhat edematous. A Wassermann was negative.

May 12 she visited the Female Medical Room and gave a history of cramp-like pains in the abdomen of three years' duration, noticeable especially after going upstairs. One examiner made the note, "I believe the condition is probably luetic in background." Another wrote, "Strongly suggestive of congenital specific. Tongue suggests pemphigus." X-ray showed no evidence of enlargement of the great vessels. The heart showed slight enlargement in the transverse diameter. This would be consistent with hypertrophy of the left ventricle. May 26 X-ray showed no defect in the gastro-intestinal tract. Blood examination showed moderate achromia, slight anisocytosis and poikilocytosis, platelets increased. In the South Medical Department the examination of the tongue showed extensive smooth atrophy the papillae nearly all gone. One or two spots suggested geographic tongue. "There may be a luetic basis." There were two fissures in the lips at the corners of the mouth. September 9 Dr. C. Morton Smith wrote, "I cannot believe this a luetic condition. Is it an expression of anemia?"

In December, 1920, blood examination showed 50 per cent. hemoglobin, leucocytes 5,600, polynuclears 56 per cent., reds 4,228,000. The smear showed achromia, poikilocytosis, anisocytosis, and two eosinophilic myelocytes. In March, 1921, a Wassermann and a gonococcus fixation test were negative.

April 21 she came to the Female Medical Department complaining of very sore tongue and lips; otherwise she was well. Upon examination she was pale, well nourished, with questionable slight exophthalmos. The pupils were normal. The lips were dry and cracked, especially at the corners of the mouth. The teeth were false. The tongue was large, smooth, with complete atrophy of the papillae. The heart measurements were as shown in the diagram. There was a soft systolic murmur at the apex and a loud rough systolic at the base varying greatly in intensity with respiration. The action was regular. The sounds were of good quality. The pulmonic second sound was greater than the aortic. The knee-jerks were hyperactive. The hemoglobin was 35 per cent., the red count 3,952,000, marked achromia and anisocytosis, but no tendency to large forms, little poikilocytosis, no blasts, whites not decreased.



Under a course of Blaud's pills the hemoglobin rose to 65 and the red count to 5,160,000 August 17. The patient was very greatly improved. The tongue was rougher and she could eat even acid foods without pain. There was still moderate anisocytosis. The platelets were low.

November 16 she reported that her feet and legs went to sleep when she sat for a long time. A blood smear showed some achromia and considerable anisocytosis and poikilocytosis.

October 2, 1922, she was admitted to the wards with a diagnosis of tumor of the left breast. An intracanalicular adenofibroma was removed. She made a good recovery and was discharged October 9. Another Wassermann on the blood was negative at this time.

In September, 1923, she was feeling well, could eat some fruits, and had no tingling of the feet. The hemoglobin was 55 per cent.

May 21, 1925, she entered the wards for the second time complaining that food stuck in her throat. She now said that all her life her throat had been small; she had never been able to swallow grapes whole, and had always had great trouble in taking pills. She was always obliged to chew her food a long time, and when she drank "made a noise like a horse." She had never swallowed any corrosive in childhood, and had had no other injury to the esophagus. She had always been a "nervous" person. Eight years before admission definite trouble began one morning when she started to eat grapefruit. She suddenly felt that a spoonful of juice would not go down. She left the table feeling as if she had a ball in her throat as big as a marble. She gagged several times. She then went back

to the table and ate a full meal of solid food without trouble. After that she had had intervals of sudden attacks of inability to swallow food, frequently liquids. Sometimes cold water taken early in the morning would precipitate an attack. Between attacks she had no trouble. If she attempted to force fluids during the attacks she strangled. In November, 1924, she had "grippe" for several days. Since that time she had had frequent trouble. Two weeks before admission she choked five times during one meal. The transient obstruction felt about at the level of the thyroid. May 10 she had a sudden eruption of small wheals which looked like flea bites but did not itch, extending from the knees to the axillae. She attributed these to the raw eggs she was taking, two to eight a day. For two years and a half all she had taken for luncheon was eggnog and ice cream. During the past year she had lost six pounds.

Examination showed a well nourished woman with slight exophthalmos. The skin showed the

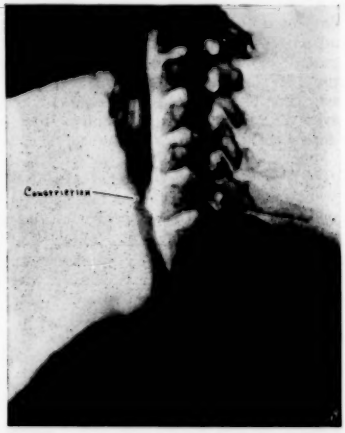


PLATE I. Esophageal web. (Not the case under discussion.) Lateral view.

eruption described. There was atrophy of the tongue, which was red and smooth.

The temperature was 98° to 99.5°, the pulse 120 to 72, the respiration normal. The urine showed 10-40 leucocytes per high power field; otherwise normal. The hemoglobin was 65 per cent., the leucocytes 6,000, polynuclears 72 per cent., reds 4,320,000. The smear showed slight variation in size and shape and slight achromia. The platelets were slightly increased. A Wassermann was negative. X-ray examination of the esophagus showed no evidence of obstruction and no abnormalities or filling defects. A throat consultant found a slight amount of thick mucus in each pyriform sinus; otherwise the esophagus was absolutely negative. He suggested an esophageal examination for possible web. Four men were unable to pass a nasal catheter for gastric analysis. The basal metabolism was —3, pulse 78, weight 54 kilograms.

May 27 she was transferred to the Eye and

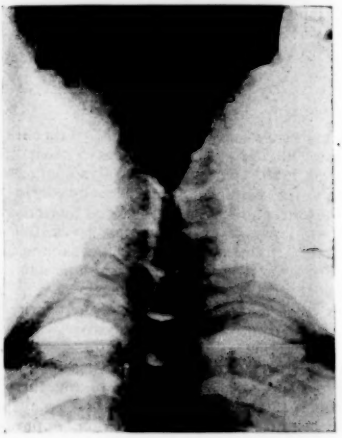


PLATE II. The same, anteroposterior view.

Ear Infirmary, where examination with the laryngoscope showed the larynx normal. A short Mosher esophagoscope was passed but was stopped at the upper end of the esophagus. There seemed to be two lumina, one on the right and one on the left. A number 26 bougie passed through the lumen on the left, but could not be passed through the lumen on the right. It was considered a probable diverticulum or pouch. Fluoroscopic examination revealed a probable web in the upper part of the esophagus on the right side. May 30 the patient left the hospital.

June 1 she returned to the Infirmary, where a second esophagoscopy was done. The tube was stopped at the beginning of the esophagus as before. After "ballooning" a firm web was observed at the beginning of the esophagus running in an anteroposterior manner, dividing the lumen into a right and a left opening. (See diagram). A number 26 bougie could be passed into the left opening but not into the right. With a right angle biting forceps the web was removed.

By June 4 the patient swallowed much more easily. Her swallowing continued to improve markedly. June 6 she was discharged very much pleased and improved.

June 24 she visited the Out-Patient Depart-

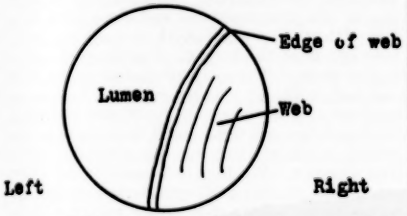
ment of the Infirmary and was seen by the operating surgeon. She was decidedly improved and was able to eat "everything." Bougies up to number 34 were passed easily in the midline.

Discussion

BY MAURICE FREMONT-SMITH, M.D., AND HARRIS P. MOSHER, M.D.

NOTES ON THE HISTORY

Dr. Fremont-Smith: The symptom dysphagia is apt to suggest to the mind of the physician a functional cause, especially if the patient be fairly well nourished and nervous. Until recently, unless patients have been definitely ill, it has been hard to explain a persistent or spasmodic dysphagia on any other basis. When a patient complains of dysphagia one thinks of organic pathology such as carcinoma of the esophagus or possibly, rather rarely, of syphilis; of intrathoracic tumors pressing upon the esophagus, of glands in the thoracic cavity, of aneurysm. I wish to emphasize, however, that even these being absent there may be very definite cause of dysphagia other than the purely functional neuroses. Cardio-spasm, a spasm of the esophagus near the stomach, various congenital anomalies, webs and pouches may be the cause for this symptom.



Apparently very little attention was paid to the Throat Room examination in this case and rather little emphasis laid on it by the throat men except to mention a visible mass. The medical people either got no history of dysphagia or paid very little attention to it. They found some other extremely interesting conditions, and as is frequently the case the patient's chief symptom was overlooked. If dysphagia was considered at all the X-rays of the gastro-intestinal tract apparently ruled out any pathology.

The tongue was evidently the reason why syphilis was considered. I saw the woman at that time and probably was responsible for the first examination. The tongue was large, very red, very smooth, with a certain amount of white streaking such as would suggest the tongue of tertiary syphilis. In tertiary lues the tongue is not only very often smooth but is lobulated, and the lobules are separated by fine white lines which are the evidence of connective tissue formation. The tongue taken together with the sore places about the mouth and the anemia suggested also the possibility of pernicious anemia, and that would have explained possibly some gastro-intestinal symptoms, although dysphagia is not one of the gastro-intestinal symptoms associated with pernicious anemia.

NOTES ON THE PHYSICAL EXAMINATION

In December 1920 there was a definite secondary anemia, except that we should expect perhaps a higher white count. The heart measurements showed a moderate enlargement. I should like to ask whether a long-continued secondary anemia can be (as we know now that a hypothyroid condition can be) the cause of enlargement of the heart without there being any underlying cardiac mischief. My own experience with the heart in anemia is that we get a murmur at the base, loud or soft, sometimes very loud, but I have not seen definite cardiac enlargement, as here shown both by percussion and X-ray, as the result of a secondary anemia itself.

Dr. Cabot: I do not think there is any. I agree with you.

Dr. Fremont-Smith: There were no cardiac symptoms, no dyspnea, no evidence of failure, to go with the enlargement. Of course we can have a heart that is enlarged as the only evidence of a rheumatic infection. The valves may escape so far as we can clinically observe, in a few cases, and there be an enlargement of the heart as the only apparent result of rheumatic fever. With a heart as large as this as the result of rheumatic infection, however, we would be more apt to find signs of beginning failure.

Can we explain the anemia as secondary to the cardiac condition? Not, I think, unless we have an active endocarditis. Of course in subacute bacterial endocarditis we get a very marked anemia. It is one of the first things that makes us suspect that we may have more than a simple endocarditis. We should expect, however, fever and a very much sicker patient than this if we were to explain such a grave anemia upon a cardiac basis.

We cannot pay much attention evidently to the platelet observations.

It was never out of our minds at this time that we might be dealing with some peculiar phase of an anemia more grave than a secondary anemia. In other words we had our eyes on a primary anemia all the time, although the blood picture apparently ruled it out. The fact that she had definite sensory disturbance in her legs, with a smooth tongue and sore mouth, is certainly suggestive. We do not, on the other hand, to my knowledge, get sensory disturbance, sore tongue and mouth in the secondary anemias.

She must have had, eight years ago, a temporary spasm of the esophagus.

Perhaps the patient was right. Perhaps she had developed a temporary anaphylaxis to eggs. It sounds like an urticarial type of eruption.

Here is a history, obtained five years after she first came, which might well, if obtained at the outset, have closely suggested the actual diagnosis.

It is worth bringing out, as will be brought out later, that the routine gastro-intestinal X-ray may miss this condition, has missed it in this case.

Before asking Dr. Mosher to discuss the question of esophageal webs one or two points are worth emphasizing. In the first place the symptom of dysphagia should be considered seriously by the internist and a very definite attempt made to find out what is the cause. It should not be assumed at once that it is a functional condition.

In the second place, can we explain her anemia on the basis of the web? We all know that Mann in Rochester at one time removed the stomachs of dogs and was able to produce by their removal an anemia which gave the blood picture of primary anemia. Very recently I learned that he has had to give a different interpretation to his results. He has been able now to remove the stomach, and by givng the correct and sufficient diet has been able to prevent the occurrence of the anemia which so closely simulated pernicious anemia. In other words, the lack of the correct diet, an insufficiency perhaps of certain vitamines or of sufficient iron, probably best explains the profound secondary anemia seen in these gastrectomized animals.

Dr. Mosher, will you be good enough to discuss this case, and the whole question of webs of the esophagus?

DR. MOSHER: This is my first appearance here and I do not know just how much you may want.

I agree with Dr. Fremont-Smith that in the symptom of dysphagia we should go a little further than is usually gone. In other words, dysphagia if constant calls for esophagoscopy. I do not agree with those who speak of "spasm of the esophagus." Spasm of the esophagus passed out of my life as a cause of essential changes in the esophagus a good many years ago. In other words, "cardiospasm" is an old-time word. Cases of cardiospasm, as I see them, are nine times out of ten cases of webs or strictures of the lower end of the esophagus. If there has been spasm it has ceased to play a part by the time the case reaches me. All irritation in the alimentary canal of course leads to spasm, but spasm as I see cases of cardiospasm is not the cause when they reach me. There is an actual stricture of some type, either a small web or a stricture which runs all around the esophagus. Spasm has gone from the lower end of the esophagus. And spasm has gone from the upper end of the esophagus. *"Globus hystericus"* has disappeared. Nine cases out of ten are due to webs of the upper end of the esophagus.

Webs in the upper end of the esophagus are due to anything which will give an erosion of the mucous membrane. These causes can be the infectious diseases. In this woman there was a question of stomatitis, almost pemphigus, and of anaphylaxis. Also the cause can be found in trauma due to hot fluids or to foreign bodies. These webs are slight strictures which occur at the mouth of the esophagus, usually back of the cricoid cartilage. They make the pyriform sinus of that side a pocket, and the sinus instead of being an open channel for fluid and food is closed. Food accumulates and slops over from there into the larynx. With this we naturally have spasm of the larynx. I admit that spasm occurs there. The patient chokes every time this pocket fills up. There is spasm, but not in the sense that Dr. Fremont-Smith used the word. As I said, we get these small webs back of the cricoid cartilage, turning the pyriform sinus into a pocket. We find them also at the lower part of the cricoid cartilage, narrowing the entrance to the esophagus. They are very satisfactory cases to deal with, because when webs are present and are seen and bitten out, the ability to swallow returns almost immediately. If we cannot bite them out they can be stretched. Again the patient gets an improvement in swallowing, and very often this is practically an improvement to normal.

Some of the cases I imagine are probably congenital. In other words, we find in the dissecting room webs coming from the back of the cricoid cartilage narrowing one half of the opening of the esophagus. Not only do we find them narrowing one half, but bilateral webs are found with a small central lumen.

This woman, when her history finally came out after frequent visits to the hospitals, had had difficulty in swallowing from birth, and the chances are that she had had this web from birth.

We have then the two types of web, the congenital and the acquired type. The acquired type is due to some inflammatory ulceration of the mucous membrane back of the cricoid cartilage which leads to the formation of a web between the back of the cricoid cartilage and the front of the esophagus. In the early days we used to have cases of *globus hystericus*. After the passage of a bougie the patient would be better. The treatment was right, but the diagnosis was wrong. Then we began to pass the esophagoscope and at first missed these webs. Finally after these examinations we began to recognize small slits in the esophageal mucous membrane. These proved to be caused by the divulsing of the webs without the operator's recognizing them. Then we began to use large

tubes, and from this time on have seen the webs. If we used a small tube we went by the web. We learned the symptoms of webs and how to find them, but the X-ray man didn't find them. The reason was that he did not X-ray the side of the larynx. If he X-rays below the web is above, and of course he does not get it.

I was brought up, and I think Dr. Cabot was, in the teaching that the epiglottis turned down and covered the glottis like the lid of a box. Then an Englishman said it did not act as a lid, but was there mostly for ornament. But it has been proved by watching the epiglottis through the fluoroscope that it does turn down exactly like the lid of a box. Sometimes we see an epiglottis that is turned forward on itself because it is too long and has been striking the posterior pharyngeal wall all these years. In swallowing this is what happens: Food in volume cascades over the epiglottis, which turns down and closes the larynx. Food or fluid in small volume does not go over the epiglottis but runs down on either side, and that is where these webs come in. If there is not a free channel there the food comes back. If we watch swallowing from the front we get a very pretty picture. We see the pyriform sinus on one side filled and the pyriform sinus on the other side also filled. Below the two streams meet. If there is obstruction in one pyriform sinus we see that dilated and food accumulated in it.

Here is an X-ray plate of a case of bulbar paralysis where the musculature of the pharynx was not acting properly, and we see what happens Here is the barium accumulated at the base of the tongue. Here it is going down to accumulate in the pyriform sinus. Below this there is a single stream. Here is the picture of the same case from the front. The barium accumulated first at the base of the tongue. Here is one pyriform sinus and here is the other; both are filled with barium. The plate did not catch the consolidated stream below the cricoid. With a web here fluid backs up and slops over into the larynx. And after these people have choked a few times naturally they get timid, drink very cautiously and cut their food down as much as they possibly can.

Here are the instruments for dealing with webs. This is what is called an open speculum for examining the larynx and the back of the cricoid cartilage. In many adult necks this is sufficient. In a long neck, however, we need a tube. This is the ordinary large esophagoscope A smaller tube will pass by a web. Having seen the web, if it is edge on we bite it out. If it is not in the plane so that we can bite it we pass a bougie or a dilator and stretch the web.

DR. CABOT: In these cases how does one account for the fact that a woman who had got along fairly well, although she had had some dysphagia, quite acutely five years after we knew she had it begins to choke? Why did it present such acuteness?

DR. MOSHER: She probably got some acute process on top of her previous condition. That, with the nervousness which goes with getting a foreign body stuck there—as I remember it she had the seed of a grape fruit stuck there. There was a question of her having a stomatitis. This could start an acute condition.

DR. MEANS: Did you say that this could occur at any level of the esophagus?

DR. MOSHER: They occur where the esophagus is narrow, that is chiefly back of the cricoid cartilage and back of the liver, where it is again narrow. Webs in the lower part of the esophagus are, so far as my experience goes, the chief cause of cardiospasm.

DR. MEANS: Can they be demonstrated by X-ray?

DR. MOSHER: We can get a pretty good hint that they are present. If we get a smooth string-like stricture with dilatation of the esophagus above it, with the history of continued difficulty in swallowing over a period of months or years, the chances are that the condition is cardiospasm or stricture of the terminal portion of the esophagus. If however there is not much dilatation and the difficulty in swallowing is of shorter duration and there is an irregularity of the narrowed esophagus, then we should be suspicious of malignancy. I used to think that a smooth, string-like structure in the terminal portion of the esophagus always meant stricture or cardiospasm, but in recent years I have seen a few cases of malignant disease which gave the same picture.

A PHYSICIAN: What is the mechanism?

DR. MOSHER: Two ulcerated and opposing surfaces of mucous membrane come together in a narrow space or in a space which is from time to time closed, and a web or a stricture results.

DR. CABOT: Have you seen anemia in these cases?

DR. MOSHER: No. I do not think I have been keen enough to notice that.

DR. FREMONT-SMITH: Of course we do not know that we have cured her anemia yet.

DR CABOT: No; it may be something else.

DIAGNOSIS

Esophageal web.

References: Asymmetry of the mouth of the esophagus and retropharyngeal diverticulum. Dr. Harris P. Mosher. The Laryngoscope, November, 1924.

Webs and pouches of the esophagus, their diagnosis and treatment. Dr. Harris Peyton Mosher. Surg. Gyn. Obst., 1917, Vol. XXV, page 175.

CASE 12092

CHILDREN'S MEDICAL DEPARTMENT,
NUTRITION CLINIC

An eight-year-old boy came to the Out-Patient Department January 24, 1917. The chief

complaints were twitching of the head and shoulders and "nervousness." His mother had had three miscarriages and three children stillborn at nine months "because she had kidney trouble." The boy was never nursed. He was fed on seven different foods until he was nine months old. From four months until one year of age he had "indigestion." At a year and a half he had measles, at two years bronchitis. Twice at three years he had rheumatic fever. Since he was three years old he had had "nervousness," worse when he was four and a half years old. He was treated at a hospital for two or three weeks a year ago for twitching of the face and shoulders and constant movements. For the past four or five years he had had snuffles. He occasionally had toothache. Eight weeks before admission he had chickenpox.

Examination showed a fairly well developed, rather poorly nourished boy constantly moving his arms, hands, eyes and head. There was tremor of the hands and tongue. The frontal eminences of the skull were prominent, giving a square forehead. The hair was thin. The throat was reddened. The teeth were carious, crooked, some missing. The heart and lungs were normal. The liver was 3 cm. below the costal margin. The cervical, axillary and inguinal lymph nodes were palpable. The pupils and reflexes were normal. The temperature was 99.2°. The urine was normal. The boy was referred to the Nutrition Clinic, where the diagnosis was underweight 17 per cent., fatigue posture, round shoulders, left scoliosis, habit spasm, eight carious teeth, enlarged glands, nasopharyngeal obstruction, cryptic tonsils, dull drums and pronated feet. Extra diet and rest periods were prescribed and he was referred to the Nose and Throat Clinic. In three weeks his weight was about the same and he still had the movements of the face and shoulders. A South Medical consultant gave the opinion, "Never strong. Did not walk until two years. Teeth not Hutchinsonian. Nothing in shins or knees. I believe this a case of inherited syphilis." Wassermanns on the boy and his mother were both negative.

February 10 he weighed 42 pounds, May 19 45.6 pounds. June 2 the syphilis consultant wrote, "With the failure to make a continuous gain on good feeding supervision, I should like to see what antisyphilitic treatment will do for him." Quinine hydrobromate was ordered. November 3 the boy was 4.8 pounds underweight (9 per cent.) He was ordered mercury with chalk. Two weeks later he was very nervous and was out of school, in spite of the extra lunches and regular rest periods. He continued to take extra diet, rest and mercury with chalk under the direction of the Nutrition Clinic until June, 1918. At that time he was 49¼ inches in height and weighed 49.2 pounds.

He was not seen again until November, 1920. The syphilologist then noted, "Square head, various 'nervous' symptoms," and ordered mercury with chalk and syrup of hydriodic acid. In December the boy was 15 per cent. underweight (10¾ pounds), and had fatigue posture, left scoliosis and round shoulders. Repeated X-ray gastro-intestinal examinations made with the question of cardiospasm showed the stomach normal. The first portion of the duodenum presented a constant defect in filling. There was evidence of considerable pyloric spasm, as there was a delay of ten or eleven minutes before the barium had passed the sphincter. The remainder of the tract was not remarkable as far as the cecum. The colon was not observed.

February 24, 1921, he entered the wards. He was now twelve years old. He had been only two years in school since he was six. His mother had had another miscarriage two years ago. He had four severe convulsions during an attack of measles at two and a half years. He had frequent headaches. He had worn glasses steadily since he was seven. His tonsils had been removed. He had had a good deal of trouble with his teeth lately. He had had marked dyspnea on exertion. His bowels had always been constipated. He sometimes urinated once at night. The choreiform movements were now much better. He was always nervous and irritable.

Five months before admission he began to have excess of saliva night and day, making him spit every few minutes, 8-12 ounces daily, so that he could not go to school. He had occasional slight gnawing epigastric pain ten or fifteen minutes after eating. He had occasional headaches associated with constipation.

On examination he was fairly well developed and nourished. There was occasional twitching of the arms and legs and around the eyes and the corners of the mouth, not definitely choreiform but more like habit spasm. The mouth filled rapidly with saliva. There was high palate. There were small cervical, axillary, and left epitrochlear glands. D'Espine's sign was positive to the spine of the third dorsal vertebra. There was slight dullness at both apices posteriorly. The heart was not enlarged. There was marked sinus arrhythmia and slight systolic respiratory murmur at the base. The blood pressure was 95/50. A hard liver edge was palpable 2 cm. below the costal margin on inspiration.

Before operation the temperature was 98.4° to 100.4°, the pulse 76 to 116, the respiration normal. The urine was normal in amount, cloudy and alkaline at all of four examinations, specific gravity 1.014 to 1.034, rare leucocytes in the sediment of two specimens. The blood showed 5,200 to 12,000 leucocytes, 30 to 72 per cent. polynuclears, hemoglobin 80 per cent. Two Wassermanns negative. Stools negative. X-rays after atropin and bromides showed the same

findings as before in all respects. The duodenal deformity was even more distinct than before. The skull was not remarkable.

The visiting physician was unwilling to make a diagnosis, but advised continuing the antisyphilitic treatment for several months, and in case X-rays showed the same condition in six or eight weeks advised exploration; in the meantime hyperchlorhydria diet. Two surgeons advised operation only after antisyphilitic and dietary treatment had been proved ineffectual, though one believed that operation would in the end be necessary. Nevertheless the boy's parents were anxious for operation and assumed all risk.

March 14 operation was done. The boy made a good convalescence and March 31 was discharged.

At the Nutrition Clinic April 18 it was found that he had gained two pounds in two weeks. He was still 16 per cent. underweight (11¾ pounds). By June 8 he had gained only a pound and a quarter more.

In January, 1922, he was 17 per cent. underweight. By March 6 he had gained only three pounds in two months. The following June he was still nearly 17 per cent. underweight. In October he was 12 per cent. underweight. He was advised to go home from school at half past ten, returning for the afternoon session if he liked.

In October a year later he was 8 per cent. underweight. He had felt very well until four weeks previously, carried wood and rode a bicycle. Then after a "strain" due to carrying wood he had pain in the stomach. X-ray showed a small residue in the stomach at six hours. Peristalsis was normal. The gastric outline and sphincter appeared regular. The first portion of the duodenum was large and presented an area of flatness or slight depression of its superior border. There was some delay in the barium passing into the second portion, and this region appeared narrow. The remainder of the gastrointestinal tract was not remarkable. The findings were interpreted as suggesting the presence of adhesions about the duodenum near the junction of the first and second portions, with a small degree of obstruction.

In November the boy was well, although he was still underweight, being obliged to overdo on account of illness of other members of his family.

Discussion

BY WILLIAM R. P. EMERSON, M.D.

This case is of special interest because it represents a large group of children who come into the hospital bearing insufficient well-defined evidence for a diagnosis, but who show every sign of impaired health. Such patients make many visits to the hospital, sometimes from one to two hundred. They go from one department to another without diagnosis.

In this case there was not sufficient evidence from either medical or surgical examinations to warrant a diagnosis, and the exploratory operation was done under protest by the regular departments of the hospital.

The diagnosis was made by observing this boy over a period of nearly two and a half years, checking up his food and health habits and ruling out every possible cause of failure to gain in weight and to come up to standard. His failure to respond was conclusive evidence that an adequate cause for his condition existed and had not been found.

Finally the only evidence of any organic disease was presented by the X-ray Department; and yet when he was under observation in the wards this evidence was not considered of sufficient weight in the Medical Department to warrant a diagnosis; but because the boy's health was so greatly impaired and because of his difficulty in keeping pace with other children and his falling away from health standards it seemed to me the exploratory operation was warranted.

X-RAY INTERPRETATION

There is probably an ulcer in the first portion of the duodenum, or an abnormal adhesion deforming it. The appearance suggests the former.

PRE-OPERATIVE DIAGNOSIS

Duodenal ulcer?

OPERATION

Gas-ether. High left rectus incision. On opening the peritoneum the stomach was found to be greatly distended with gas. This was pressed out and evacuated through the esophagus and the mouth. There was a band of adhesions across the first portion of the duodenum, definitely constricting it. The duodenum was large above and below the constriction. The finger tips met through the lumen of the pylorus. There was nothing abnormal in the region of the ligament of Trites. The gall-bladder was negative. The intestines were unusually moist and somewhat redder than normal, though there was no actual free fluid in the abdominal cavity. There were no adhesions except in the region of the duodenum. The mesentery was studded with visible and palpable glands the size of the little finger nail. The appendix was long, club-shaped and cracked. After thorough visual and manual exploration a gland was removed from the mesentery for diagnosis. The band over the duodenum and other congenital (?) adhesions in that region were freed. The appendix was removed and its stump cauterized and buried. The wound was closed in layers without drainage.

The surgeon notes, "Almost fluid in abdomen. Appearance suggestive of tuberculosis."

PATHOLOGICAL REPORT

The appendix is 7 cm. long and shows no gross change.

There is a pea-sized lymph node showing on microscopic examination normal lymph node tissue.

FURTHER DISCUSSION

The adhesions when found accounted for all the symptoms, and by simply releasing these adhesions the boy became well.

There is in children a very strong tendency in nature for health, and any falling away from reasonable standards requires a diagnosis that we may call a health diagnosis. Such children do not secure a diagnosis of health in the hospital because the function of the hospital is the diagnosis of disease, and not until their symptoms become sufficiently severe or organic lesions are sufficiently great to call for relief do such children receive attention.

This is the main argument for carrying on a nutrition clinic in an out-patient department. The diagnosis of causes for falling away from reasonable standards of health is of course preventive medicine, but such diagnoses are not made unless machinery is organized for this special purpose. This, then, is the chief function of the nutrition clinic, although through the control exercised by the nutrition class we are able more accurately to gauge the response of the individual child to treatment by comparing his gain with that of others under similar conditions of living.

Such observations were of great help in this case. It is of special interest to note that the boy's condition was so poor that a diagnosis of hereditary syphilis was insisted upon and treatment continued for over a year, as was also a diagnosis of functional nervous disorder. In an attempt to make the boy "free to gain" his adenoids and tonsils were removed, but without demonstrable results.

Bryant* has reported the remarkable frequency of such adhesions, namely that in 180 male cases of all ages 11 per cent. were found to have adhesions or bands in some part of the abdomen, the duodenum, as in this case, being most frequently involved. In most instances there are apparently no symptoms, but it seems reasonable to believe that many cases of digestive disturbance, bowel irritation, allergy, etc., result from this condition to a degree sufficient to account for impaired nutrition, growth and development.

The various medical tests and examinations are of course valuable aids in diagnosis; but in all obscure cases of retarded development in children careful observation in a nutrition clinic over a considerable period of time with weight chart, correction of faulty food and health habits, etc., is of the greatest value in arriving at an accurate diagnosis.

DIAGNOSIS

Adhesions and bands across duodenum.

*Visceral adhesions and bands; normal incidence. American Journal of Medical Sciences, January, 1922, No. 1, Vol. CLXIII, p. 75.

CASE 12093

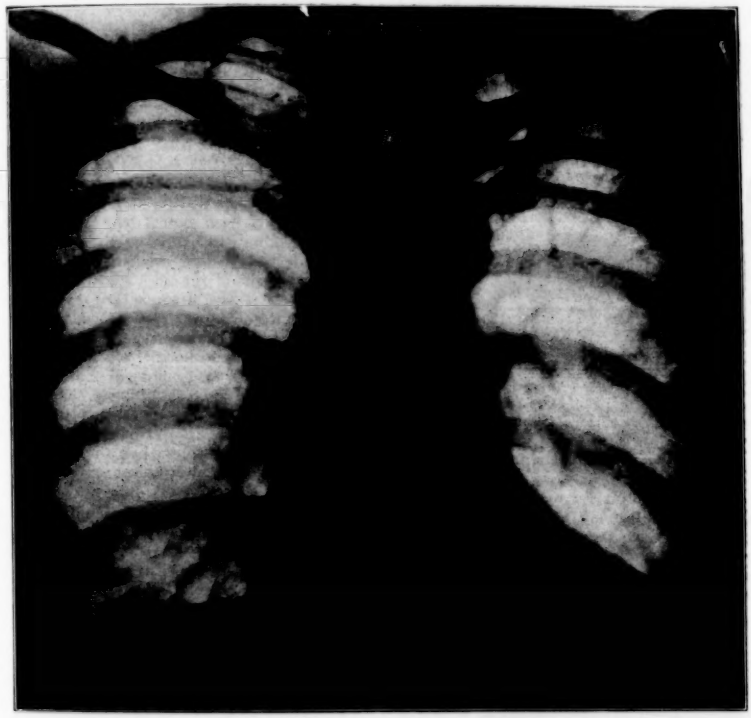
SURGICAL DEPARTMENT

A married German-American woman thirty-eight years old entered March 25 complaining of nervousness, irritability, tremor of the hands, extreme warmth with almost constant perspiration, palpitation of the heart, loss of weight and fatigability of ten months' duration. Her general health had always been good. She did not remember the diseases of her childhood except diphtheria. During the past few years she had had many head colds. For a year and a half she had had occasional attacks of blurring of vision lasting fifteen minutes, occurring about once a month, usually during menstruation. During these attacks she saw only half of an object. The attacks were followed by severe headache. Eighteen months before admission a number of red raised papules appeared on each buttock lasting two or three months, non-suppurative, fairly hard. Ten months before admission a sore the size of a half dollar appeared on the thigh and lasted two months, disappearing two days after the use of sulphonaphthol. Three months after its apperance a red, raised sore, indented in the middle, developed on the left elbow. This lasted three months, disappearing a week after antiluetic treatment was begun. Within the past six months she had had some dyspnea. She had palpitation on excitement.

Three years before admission she began to have frequent sore throats, and had a peritonsillar abscess which disappeared without bursting. She was ill in bed for two weeks, with considerable fever. Since that time she had not recovered her strength and had had frequent colds and sore throats every spring. About ten months before admission she found she was getting very nervous and irritable and very warm, with marked sweating and loss of weight. Night sweats were less than perspiration during the day. She also began to drink more water and her throat easily became parched. Eight months before admission she noticed gradual onset of exophthalmos and enlargement of the neck. For six months she had been taking care of a sick father-in-law who constantly antagonized and irritated her. Four months before admission she came to the Out-Patient Department, where

it was discovered that she had tertiary syphilis. After a course of antiluetic treatment she noticed remarkable improvement, gained fifteen pounds, and felt like a different person. She was much less nervous and had less sweating and fatigue. Her catamenia, which had been very painful before the treatment, were now not painful at all. She thought also that her neck became smaller. After the antisyphilitic treatment was discontinued she went downhill very rapidly; three weeks later, three weeks before admission, she was in the same condition as before the treatment.

Examination showed a well nourished woman, nervous and fidgety, with exophthalmos, moist skin, trembling hands and rapid heart. The thyroid showed uniform enlargement. No bruit was heard. There was lid lag and poor convergence. The throat and tonsils were enlarged and injected. The apex impulse of the heart was not seen or felt. The left border of dullness was 8.5 cm. outside the midsternal line, 1 cm. outside the midclavicular line. The right border of dullness was 4 cm. to the right. The heart showed the "mitral configuration." The first sound was loud, the second sound snapping at the apex, where a rough systolic murmur was heard, and a middiastolic when the patient lay on the left side. The pulmonic second sound was reduplicated. The aortic second sound was greater than or equal to the pulmonic second. The blood pressure was 160/95 to 140/73. The pole of the right kidney was palpable. The rest of the examination, including the pupils and reflexes, was negative.

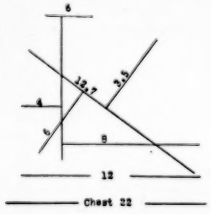


The heart shadow is slightly increased in size to the left in the region of the ventricle. There is also slight prominence of the ascending aorta, but no definite increase in actual measurements or increase in the shadow of the aorta in the lateral view. The lung fields are clear. The diaphragm is in the usual position. There is no evidence of intrathoracic goiter or other mediastinal tumor.

Before operation the temperature was 97.6° to 99.5°, the pulse 77 to 103, the respiration 19 to 28. The urine was cloudy at two of four examinations, specific gravity 1.020 to 1.032, a very slight trace of albumin at one examination, leucocytes at all. The blood showed 6,200 leucocytes, 46 per cent. polynuclears, hemoglobin

80-85 per cent., 4,462,000 to 4,982,000 reds, smear normal. Three Wassermanns were strongly positive. The non-protein nitrogen was 47 mgm., the sugar tolerance fasting 109 mgm. per 100 c.c.; one hour after eating 141 mgm. per 100 c.c., two and three-quarters hours after eating 105 mgm. per 100 c.c. All urine specimens were sugar free. March 27 the basal metabolism was +51, the pulse 94, the weight 58.4 kilos; April 7 basal metabolism +24, pulse 78, weight 57.7.

By X-ray the heart shadow was slightly increased in size to the left in the region of the ventricle. (See illustration.) There was also slight prominence of the ascending aorta, but no definite increase in actual measurements or increase in the shadow of the aorta in the lateral view. The lung fields were clear. The diaphragm was in the usual position and moved normally with respiration. There was no evidence of intrathoracic goiter or other mediastinal tumor. The teeth and sinuses were negative.



A throat consultant reported, "Buried cryptic tonsils. Tonsillectomy indicated. Larynx—good movement; no paralysis."

March 28 Lugol's solution minims v t.i.d. was ordered. April 8 operation was done. The post-operative orders were for morphia, rectal tap water one pint immediately, then eight ounces every four hours; Lugol's solution twenty minims in each of the first three taps following operation; then alternate taps with twenty minims of Lugol's and glucose taps eight ounces; triple bromides thirty grains in the second and fourth taps; ice bags to precordia.

The patient did very well after the operation. April 12 after the removal of four clips she felt faint and had drawing up of the fingers and toes and pulling sensations in the face. The blood sugar was 92 mgm. The next day the rest of the clips were removed. She felt very well. The wound was in good condition.

The morning of April 15 there was a severe attack of tetany with carpopedal spasm, Chvostek's sign, and profuse sweating and rise in pulse rate. The blood sugar was 96 mgm., the blood phosphate 6 mgm., the blood calcium 7 mgm., the CO_2 combining power 28.8 per cent. The symptoms increased steadily. Finally the patient had a convulsion with cyanosis. During the administration of calcium chloride intravenously that noon, and before more than one cubic centimeter had been given, she died.

Discussion

BY EDWARD P. RICHARDSON, M.D.

The diagnosis is almost immediately suggested by the presenting symptoms. Her past history does not appear to be important.

This headache is migraine, isn't it?

Dr. Cabot: I suppose so.

Dr. Richardson: The question is whether her throat attacks were tonsillitis or something of that nature, or whether they could be associated with her skin eruption. I have seen tonsillitis occurring rather frequently in people with symptoms of this general type. I have also seen tonsillectomy done, and I have never been convinced of the tonsillitis as an etiological factor, nor have I been struck by the benefit from the tonsillectomy in exophthalmic goiter.

It seems to me here, with her exophthalmos and enlargement of the neck and the presenting symptoms, that the diagnosis of exophthalmic goiter is quite obvious. The association of mental or emotional strain with exophthalmic goiter is too frequent to be entirely neglected. Just in what way it is an etiological factor I do not know, but I certainly should say that it has a higher incidence in this condition that in the average medical case. Here this mental strain apparently occurred later than the beginning of her symptoms, so that we cannot consider it as an etiological factor.

I have seen a few cases of exophthalmic goiter associated with lues. I should say that while the patient's general condition might be benefited by the antiluetic treatment, ordinarily we should not expect an effect from that on the course of the exophthalmic goiter. Another possible diagnosis is adenomatous goiter with hyperthyroidism. We should not expect the condition to show exophthalmos. The goiter itself is ordinarily irregularly enlarged, it feels nodular, and the duration of the goiter is usually many years. In this case apparently the goiter had been present only a few months and the enlargement was symmetrical.

In regard to the heart, from the surgical point of view one thing I am interested in is the forcibility of the cardiac impulse. In a rough way it would seem to me somewhat proportionate to the intensity of the symptoms in a given case. The heart action of course is exaggerated by excitement when the patient comes down to operation. During the administration of anesthetic and operation the apex impulse may be felt, and is of some importance to the surgeon as an accessible guide to the patient's condition. High pulse pressure is common in these cases, and it can be shown that the rise in pulse

pressure is roughly in proportion to the increase in metabolic rate. Here we have a definite increase in pulse pressure.

The blood picture is not remarkable. She still showed a very strongly positive Wassermann. The non-protein nitrogen was apparently somewhat high.

She was given a sugar-tolerance test because cases of hyperthyroidism show sometimes a diminished tolerance. This was to be compared with a second test after recovery from operation, and I should say showed a normal curve.

There are two examinations we ask for in goiter cases before operation. One is of the vocal cords, to make sure there is no paralysis. The other is X-ray for intrathoracic goiter. That is much more important, I think, in adenomatous goiter than in exophthalmic, where the gland is symmetrically enlarged.

An important question was whether she should have operation in view of her syphilis. That had been treated. There was no definite evidence of cardiovascular syphilitic damage, and it seemed proper to go ahead with the operation.

PRE-OPERATIVE DIAGNOSIS

Exophthalmic goiter.

OPERATION

Gas-oxygen. Transverse incision. The muscles were divided, exposing a moderately enlarged symmetrical thyroid. About nine-tenths of both lobes was removed, except for the posterior internal portions. Hemorrhage was moderate. There was no evidence of injury to the recurrent laryngeal nerves and parathyroid glands. Usual closure.

PATHOLOGICAL REPORT

Two lobes about the same size, each measuring 2.5 by 4 by 5.5 cm. On section they show reddish-brown fibrous surfaces. There is no visible colloid.

Microscopic examination shows hyperplasia of the follicles and proliferation of their lining epithelium with numerous papillary ingrowths.

Follicular hyperplasia (toxic type).

FURTHER DISCUSSION

That represents the usual operation when the patient is in good condition, after having had Lugol's solution.

The posterior internal portion of the gland was not removed in order to protect the recurrent nerves and parathyroids, which are both in relation to this part of the gland. In the great majority of cases this is an entirely adequate precaution. If we attempt to expose the parathyroids and avoid them we may damage them or their blood supply, because they are very difficult to see. In the same way, if we expose the laryngeal nerves simply the exposure and traumatism may cause paralysis. So the usual technique in this country keeps away from both those structures. If both nerves are damaged there is spasm of the glottis which may call for emergency tracheotomy.

"Drawing up of the fingers and toes and pulling sensations in the face" was an extremely important observation in any case, particularly after thyroid operation, where I should think it was clear evidence of tetany.

The blood sugar was within normal limits.

Apparently either that observation made no impression on the person who made it at the time, or else it was not reported. At any rate two days went by and no treatment was carried out, the patient in the meantime being in good condition.

Chvostek's sign is increased muscular excitability on tapping the facial nerve. A more striking thing is Trousseau's sign, constricting the arm to prevent the return of blood, and with the venous congestion we get a drawing over of the hand into the characteristic position of tetany. I have no doubt that if on any day between the fourth and sixth the venous return had been obstructed in that way we should have had the characteristic position of tetany.

The point in this case in the first place is, there was warning of tetany which for some reason or other was not converted into action. There was time for treatment, which would be in the first place giving large doses of calcium lactate by mouth; second a high carbohydrate and low protein diet; third, if the symptoms were severe the intravenous calcium chloride; and finally the use of parathyroid extract.

Some blood was taken for examination. She was not immediately given calcium chloride to raise her blood calcium, which was later shown to be low, as we should expect, and she went suddenly into this convulsion. Even at the late termination the great seriousness of the condition was not realized. I think that was perhaps because surgically we see relatively mild tetany only at rare intervals and there seemed to be a good deal of time.

This represents on the whole a condition which should have been curable in the first place by raising the blood calcium and in the second place by the use of Collip's parathyroid extract, which is very effective. I often think that the most important part of dealing with thyroid, particularly with exophthalmic goiter, is not so much the question of the operation as it is dealing with the complications that may arise. I feel sure that there are very few types of surgery where the prompt recognition of the complications and the efficient dealing with them are so important. Here of course is a situation which might easily have been remedied.

DR. CABOT: I should be glad if Dr. Holmes

would look at the X-ray plates in this case, because a statement was made about "mitral configuration" which I want to check.

DR. HOLMES: There is nothing to suggest the mitral shape in this heart. There is a rather prominent aorta, both on the right and left, but the actual measurements are not increased. I notice in the fluoroscopic notes that nothing was noted in the lateral view, no evidence of increase in the size of the aorta. The measurements of the heart are slightly greater than normal. It is a very small chest; the total transverse diameter of the heart is twelve cm., which would be well within normal limits as a rule; but with such a small person it is a little over, and we thought there was some enlargement of the right ventricle. The question we were particularly interested in was the presence or absence of luetic aortitis. She has rather more tortuosity than a woman of her age should have, but there is no positive evidence of luetic aortitis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Exophthalmic goiter.
Parathyroid.
Tetany.
Subtotal thyroidectomy.

DR. EDWARD P. RICHARDSON'S DIAGNOSIS

Exophthalmic goiter.
Tetany.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Follicular hyperplasia of the thyroid, toxic type.)

2. *Secondary or terminal lesions*

Thyroidectomy.
Status lymphaticus.
Edema of the lungs.

3. *Historical landmarks*

Slight chronic pleuritis, left.
Slight luetic aortitis (?)

DR. OSCAR RICHARDSON: The examination in this case was restricted to the thorax. The operation wound was in good condition. In the lower part of the right upper arm anteriorly there was a sutured wound.

In each pleural cavity we found about 100 c.c. of thin pale fluid. On the right side there were no pleural adhesions, on the left a few posteriorly midway.

The thyroid gland was wanting. The thymus was present and weighed thirty-five grams.

The bronchial glands were negative, but the glands along the trachea were moderately enlarged. There were no areas of consolidation in the lung tissue, but the lungs showed much edema.

In the ascending portion of the thoracic aorta there were a few scattered fibrous areas which somewhat resembled luetic aortitis, and microscopic examination suggested that those patches are patches of luetic aortitis.

DR. E. P. RICHARDSON: Is it true that most of the cases of hyperthyroidism you get have an enlarged thymus?

DR. OSCAR RICHARDSON: I won't say all of them. It is true that these cases that die very close to operation are usually associated with a hypertrophied thymus, status lymphaticus.

DR. E. P. RICHARDSON: I should feel that this was a case that we should not have had an opportunity to see at autopsy.

DR. OSCAR RICHARDSON: It would be interesting in those cases that do not die to see if there is any evidence of thymus enlargement. Because it seems curious that these cases that die suddenly are usually associated with status lymphaticus.

DR. HOLMES: She does not show any evidence of enlarged thymus by X-ray, and they do not in the slighter cases.

DR. CABOT: How about showing up the enlarged thymus in children before tonsil operation? Are you pretty sure of doing that?

DR. HOLMES: Dr. A. S. Macmillan, of the Children's Hospital, has made some rather conclusive studies on that. He has had about 4000 cases in which he has made a positive diagnosis, and none of them had shown any trouble. He found about seven cases out of a thousand that showed some enlargement which he thought might be enlarged thymus or something else. Those he did not allow to be operated on, and since then they have had no deaths.

I am rather disappointed that we did not get the luetic aortitis. Perhaps we did not put enough weight on the tortuous aorta.

DR. OSCAR RICHARDSON: It was rather slight, it is to be remembered.

DR. HOLMES: I think that aorta really is larger than we should expect with such a small person, although it is not larger than the normal.

DR. OSCAR RICHARDSON: Her heart was small, and that would be a rather large aorta for such a heart.

DR. HOLMES: As we look at the body the aorta is large, but as we measure it it is not.

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LIVER EXTRACTS

A cure of hypertension has been the aim of many physicians for many years, but though a variety of means has been advocated and a varying degree of success has been attained in certain instances, yet it can fairly be said that so far hypertension has withstood all attacks made upon it.

Very recently Dr. MacDonald, whose interesting paper appears in this number of the Journal, has elaborated an extract of the liver which appears to reduce markedly the normal blood pressure of animals and to exert, in certain instances, a beneficial effect on hypertension of man. It is to be noted, however, that Dr. MacDonald does not as yet advise the use of his or any other liver extract in human cases. He points out forcibly that his preparation is not ready for clinical use at this time. Other men, notably Dr. R. H. Major of Kansas City, have elaborated similar, though by no means identical extracts. But it should be understood that there is little in common between these various products except that they are derived from the liver. The results with one preparation cannot be used as evidence for or against the practical efficiency of another. And this should be the more clearly borne in mind as some products of this same general nature are in more or less common use throughout the country.

It is deplorable indeed that any commercial house should at this time sell to the medical profession at large organ extracts to reduce blood pressure. Such exploitation of physicians and patients alike can only bring opprobrium on the firms concerned and disappointment to the public. Dr. MacDonald agrees most heartily with this point of view. Commercially prepared extracts may well be placed in the hands of a few selected men for experimental work—indeed this must sooner or later be done; but that unproved and untried extracts should be sold broadcast among the medical public and greeted as a cure by the laity is indeed a sad commentary on the gullibility of the profession and integrity of the firms concerned.

Patients with high blood pressure commonly demand that it be lowered. Physicians are often called upon to treat a symptom over which they have had but little control. And now when it seems possible that an adequate means of combating this condition may be at hand it is well to consider carefully the evidence for its practical efficiency.

Hypertension is essentially a symptom. Its etiology is obscure and in all probability multiple. Its progress is notoriously uncertain and complications in the renal, vascular and cardiac systems play a far greater role in prognosis than does the hypertension itself. Nor has it been proved that these complications are the direct result of the high pressure. They may well be merely accompaniments and be due in last analysis to the same cause or causes which resulted in elevated pressure. An adequate and logical cure should strike at this common root. The reduction of blood pressure by means of such toxic bases as histamine, choline and peptone may be striking but it is not necessarily logical and such bases should be eliminated before an extract is to be used clinically. Dr. MacDonald and one of the large commercial firms working independently on the subject recognize the validity of this proposition and are striving to procure an extract which shall be curative without being toxic. A truly efficient cure which strikes at the cause should be our aim.

Hypertension, furthermore, is very uncertain in its course. A fall is not necessarily accompanied by clinical improvement nor is a rise invariably followed by adverse symptoms. In many cases the blood pressure will fall from 20 to 100 points during simple rest. Daily and hourly variations of from 20 to 40 points are not unusual. The problem of adequate "control" is indeed difficult and we should not be too hasty in drawing conclusions concerning any new found remedy. Hundreds of cases must be studied carefully and compared with controls or other types of treatment before we

can fairly judge of the practical efficiency of a given regime.

It would seem wise to withold final judgment on any new treatment until sufficient evidence is at hand. Dr. MacDonald has approached the subject with ingenuity and laudable caution. It is to be hoped that the near future may give us a logical and efficient cure for the symptoms of high blood pressure by eradicating or overcoming its pernicious cause. But that day may yet be far off and this fact must be recognized.

A SUIT SUCCESSFULLY DEFENDED

Dr. A. R. Kimpton was recently sued for malpractice. He was acquitted. The hospital in which the work was done was also sued. The verdict was in favor of the hospital. These suits were long drawn out and put Dr. Kimpton and the hospital to great annoyance.

That the final result is due recognition of the impropriety of the suit is some consolation but the annoyance, expense and loss of time involved in the defense can never be requited. This and other possible suits may be regarded among the hazards of medical practice. All fair-minded persons will concede that protection from injury to a human being brought about by ignorant or unskilled practitioners is reasonable, but a well educated physician should never be subjected to the attack of a disappointed patient based on false premises. Regardless of the direct financial danger there is a definite harm to the doctor in the publicity given to a suit for alleged malpractice. If the claim is unwarranted, the doctor should have, in equity, some redress but it is doubtful if the present scheme of individual rights will permit of requiring the claimant to assume responsibility for the damage to the doctor who is obliged to defend himself when the contention is not maintained.

In order to protect those who may be the victims of automobile accidents the state regards every owner of a motor vehicle as a potential menace to life and property and has arranged to demand of all such owners some protection to victims through insurance. If a person contemplating suing a doctor could be obligated to take out insurance which would indemnify the doctor if the suit is not successful, there would be fewer suits for malpractice. An insurance company would not issue a policy unless reaonably sure that the contention is based on good and sufficient grounds.

Are not doctors as much entitled to protection against suits, some of which are based on the gambler's instinct, as the owner of a damaged automobile? Doctors are hedged about with possibilities of trouble in other ways such as narcotic and other restrictions. They make few protests and often suffer in silence. Some day the one hundred and forty thousand doctors in this country may unite and demand better treatment. Since we are accused of being a trust, we would stand no lower in the estimate of the people if we demanded better treatment and we might no longer be regarded as legitimate game with a perpetual open season.

THE RECENT DISCOVERIES ABOUT CANCER

This Journal has published a few statements from time to time setting forth some features of the studies of Gye and Barnard and the work of Blair Bell which we believe represented the attitude of those who are competent to discuss the claims of these investigators which have been published in *The Lancet*.

Authoritative statements have been made public in the campaign notes of the American Society for the Control of Cancer, Volume VIII, January 1926. The conclusions therein made are most convincing because they are the result of a careful and critical analysis of the articles published by the investigators cited above. The following quotation puts the situation clearly before the profession:

"The public has quite misunderstood these announcements, and as a result serious harm has been done, and continues to be done, to the cause of cancer control. Much of the careful teaching which for years has been carried on to overcome the popular misconceptions which it seems natural to hold with reference to the nature and causation of cancer, and to insure proper treatment for this disease, has been set aside, and the public has brought itself to a state of mind in which it is ready to accept the most fantastic theories and the most ridiculous pretensions as to its cure. This is a deplorable situation and one of which full advantage is being taken by quacks."

This document should be carefully studied by all who wish to see a criticism which is, so far as we have observed, the best and most logical analysis of the claims of these investigators. The tone is conservative because mention is made of the assertion that these investigators plan to submit later reports. We are inclined to the opinion that it would have been much better and certainly more humane if further contemplated investigations should have been prosecuted before announcement of the work done had been made public.

The only claims for practical therapeutic progress have been made by Blair Bell and since he has omitted to publish some of the technical details of the manufacture of his colloidal lead preparation his work cannot be confirmed by others. Reading between the lines one may infer a definite criticism in the campaign notes of the American Society for the Control of Cancer of the ethical standing of those who have claimed the credit of supplying new information regarding this important problem.

THE DESIRE TO KNOW AND THE WILL TO BELIEVE

THE conflict between the true scientific method of arriving at conclusions and the prejudiced belief derived from blind adherence to traditional authority was the subject of the address of Professor Edwin Linton, retiring vice-president of the section on Zoology of the American Association for the Advancement of Science, as published in *Science* under the title "The Scientific Method and Authority."

This conflict is in general between all who seek to know the truth as the result of experience or controlled investigation and those who prefer "to rest upon the slumber-wooing bosom of tradition," accepting as authority those makers of statements which they wish to believe. It has happened recently that the most spectacular form of dissension has been between science and unscientific religion—Modernism and Fundamentalism—although for Medicine other anti-science activities loom more portentously. "The real line of cleavage, however," Professor Linton writes, "is that which separates those who arrive at truth by way of the scientific method from those who frame their beliefs in accordance with some traditional authority." The scientific method he defines as that which, "when reduced to its simplest expression is no more than those processes which every normal person employs, whereby, through observation, experimental tests, and comparison with knowledge already possessed, he arrives at a reasoned conclusion."

It is this sheer inability or obstinate unwillingness of large masses of individuals to arrive at reasoned conclusions that blocks the paths of science as the winter snows block the hill roads of New England and but a feeble answer is given him who asks the wind can Spring be far behind. We who practice the art of medicine are not free from criticism and often our knowledge of science is but a frail staff, but let it be said at least that we recognize it and respect its methods, and whether the laboratory is a closed door or an open one to us, in our daily life, generally without realizing it, we walk in the paths of science and trust its methods where all else fail.

We are Modernists—we cannot fail to be Modernists if we would go forward—and the Fundamentalists with whom we must contend are not in this respect anti-evolutionists, although they may be tarred with this stick also, but those who are fundamentally unable or unwilling to face the proven facts. Professor Linton likens the anti-evolution authors to the anti-vaccinationists and anti-animal-experimentalists who "have an unerring instinct which leads them to quote as authorities persons who are unknown to specialists in the subjects concerned, or, if indubitable authorities are quoted, the extracts selected belong to a time when knowledge of the subject had not advanced to its present stage. They quote authorities to win decisions or to capture votes, not to establish truth."

Medical science is essentially a practical science, but it also has its old man of the sea to carry, and between us, doing our best to overcome ignorance and traditional authority, and the pure scientists, doing their best against the same obstacles, there must be a common bond of sympathy.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MACDONALD, W. J., A.B., M.D., F.A.C.S., Surgeon to Wellandra Hospital, St. Catherine's, Ontario. The title of his paper is "The Present Status of the Effect of Organ Extracts on the Control of Blood Pressure," page 381.

As co-author with Dr. MacDonald is

BURNETT, T. C., A.B., M.D., Associate Professor of Physiology in the University of California.

NICHOLS, JOHN H., M.D. Harvard Medical School 1892, Superintendent of the State Infirmary at Tewksbury. Member Massachusetts Medical Society and the Boston Society of Psychiatry and Neurology.

GOODHUE, FRANK W., Chief of the Division of Aid and Relief of the Department of Public Welfare.

CHAMPION, MERRILL E., A. B., M. D. Harvard Medical School 1906; C.P.H. Harvard and Technology School of Public Health 1914; Director, Division of Hygiene, Massachusetts Department of Public Health; Instructor in Child Hygiene, Harvard School of Public Health.

BIGELOW, GEORGE H., A.B., M.D. Harvard Medical School 1916; Doctor of Public Health 1921; Formerly Director, Division of Communicable Diseases, Massachusetts Department of Public Health; Now Commissioner of Public Health for Massachusetts.

LOMBARD, HERBERT L., A.B., M.D. Bowdoin Medical School 1915, M.P.H. Harvard School of Public Health 1924. For three years District Health Officer of the Maine State Health Department. From June 1, 1925, to December 15, 1925, he was Field Agent of the Committee appointed to investigate the prevalence of cancer. Their subject is "Cancer in Massachusetts," page 388.

BEARSE, CARL, M.D. Tufts College Medical School 1915, Army Medical School 1918. Member Massachusetts Medical Society and Boston Orthopedic Club. Assistant Visiting Surgeon to Beth Israel Hospital. His subject is "On the Etiology of Congenital Club Foot," page 394.

LEGISLATIVE NOTE

House 998, the bill asking for the study of medical schools and medical education by the State Department of Education, has been given leave to withdraw.

MISCELLANY

HAVE YOU PAID YOUR ANNUAL DUES?

EVERY year some Fellows of the Massachusetts Medical Society are annoyed because the JOURNAL is not received owing to failure to pay the annual dues. It is not surprising that the complexities of life often cause the postponement of detailed matter of business obligations until attention is again called to an unpaid account. We do not wish to annoy busy doctors, but we are obliged to conform to the regulations adopted by the Council and must revise the mailing list after March first. If you haven't paid we must take your name from the list.

REPORT OF THE SESSIONS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION, CHICAGO, FEB. 15-18, 1926

THE first session of the Council was opened by an address by Dr. A. D. Bevan of Chicago on the problems growing out of the Association of Universities and Medical Schools. It was around this as a general theme that the deliberations of the Council centered at this first session. Three outstanding points were brought to the front by the speakers and elaborated by those who participated in the discussion.

First. The desirability of academic affiliation of medical schools with universities.

Second. The necessity for bringing medical education into line with other educational advance by a recognition of the fact that all medical students can not be treated alike, either in estimating their qualifications to study medicine or in their progress through the schools.

Third. Medical educators have brought it about that their own profession has set forth iron clad rules as to what professional education shall consist of both in its technical, cultural and pure science aspects and have forced University educators into a position where academic freedom is hampered.

Following the example of this Council, other professions are organizing on the same lines and now it is up to medical educators to show the way out of the dilemma they have created, for not only have they hampered academic freedom but they have in a way defeated their own ends. Perhaps the best paper of all was Chancellor Capen's discussion of the papers forming the second half of the first session's program. Dr. Bevan declared it was the feeling of the Council, that almost every state needs a medical school to keep the medical ideals of the state high and the profession of the state abreast of the times. He then outlined what he regards as the ideal medical school equipment, a lay out which Dr. Wilbur in the discussion, designated as the "Chicago idea," meaning by that it was so ambitious a conception that most states would have to be content with a far less expensive proposition and that as "good time may be kept by a small watch as by a Big Ben".

To carry it out there must be co-operative endeavor on the part of the University and the community, the community bearing the expense of the Hospital and Dispensary features of it while the University provided the laboratories, clinical teaching and administration. Though it was desirable that there should be a close affiliation of the medical school with the academic department, it was not necessary that they should be on the same campus. He advocated an allotment of land of about twenty acres. The cost of proper laboratories, six in number, would be about $2,000,000. Equipment for the clinical work would call for $500,000 more and to provide for a school of this sort the community must needs have $40,000,000 invested in hospital buildings and endowment to yield an income of $2,000,000 to carry it on, after having built the buildings.

The University's investment for the laboratories, salaries of teachers, upkeep of buildings, administration, etc., would need to be from five to ten millions of dollars; this for a school of not over one hundred and fifty students in a class. He stated that it had not been proven that a small school produced any better results than a large one when properly financed and equipped. This provides for full time clinical as well as science teachers. He believed that economies of time would be effected in the next ten years, whereby a medical school graduate would be ready to enter upon practice at the age of twenty-five or twenty-six instead of twenty-seven or twenty-eight, as now.

The second paper was presented by Charles R. Mann of Washington, Director of the American Council on Education. He cited the way in which various specialized groups of educators are seeking in these days to co-operate to aid in educational progress. This is taking place in secondary schools, high schools, colleges, and in certain technical schools, particularly those engaged in teaching engineering. In certain of the latter schools, it has been shown that by far the highest percentage of successful engineers, were graduated from among the highest graded graduates of the High Schools from which they entered the engineering schools, and that only about three per cent of low graded High School graduates became successful engineers. The importance of careful selection of students who enter engineering

courses becomes at once apparent. This will doubtless hold true of other professions and callings. The Public is beginning to demand that children be sorted with a view to fitting them to such specialized groups as they are best qualified to succeed in. Certain industries are publishing "occupational specifications" which indicate what the industry needs in its employees; these specifications are then turned over to the schools for interpretation in the hope that the curriculum may be modified to meet their needs. This has been done in the army during and since the war and in some instances when careful selection had been made, the work they were learning could be mastered in half the time taken by unselected workers in the same field.

H. M. Tory, Ph. D., President of the University of Alberta, gave a brief account of the origins of our present day knowledge of medicine and pointed out the fact that scientific medicine did not make a start until Vesalius began his anatomical studies. The Public at the time of Pasteur and even in our own times, when President Eliot proposed to allow Medical Chemistry to be taught by non-medical teachers, severely criticised the suggestion. They wanted to know what a non-medical man could know of science that was practical to teach a doctor? He urged that fundamental science should be taught under University auspices and emphasized his belief that a broad conception of science should be a part of a medical education. He thought that the type of man entering upon the study of medicine should be closely scrutinized as to his adaptability on moral, intellectual, and technical grounds. The fact that a man "has a good bedside manner" must never be a substitue for knowledge. A question of fees must never be permitted to influence the administration of a medical school, when it comes to the admission of students. Support of the school must come from some other sources. Research must be provided for and supported. In this way commercialism may be best combated in school or hospital. Standards of examination must be University standards.

The next paper was by A. B. Dinwiddie, LL.D., president of Tulane University. His paper dealt with the problems arising out of prescribing premedical qualifications of college grade for admission to the medical school and the resulting confusion of general educational standards and the hardship of trying to fit the two preclinical years into the old four year curriculum of the medical school. The matter was largely an administrative one. The salary questions for teachers of the science subjects in the premedical years were often a source of trial because it created discord among the University teachers of science, who were, as a rule, paid less for more work.

President A. Stanley MacKenzie of Dalhousie University of Halifax, N. S., showed how his University had solved the difficult problem with which it had been confronted when, without resources adequate to handle the situation, they had been obliged to take over a defunct medical school. They worked out the solution by pooling the interests and resources of the various Charitable organizations operating in the city, having medical activities, in a Community Health Center which provided the school with a Dispensary without great cost to the University. This with a co-ordination of the Provincial Hospital and a Pathological Institute, a Maternity Hospital, a Children's Hospital and a Provincial Hospital for the Insane, provided them with the facilities that were necessary to give proper and adequate clinical opportunities for their students. These papers were discussed by Drs. Lyon, Wilbur, and Pepper.

The second portion of the program, dealing with the hindrances to University action in medical education, was introduced by a paper from the President of the State University of Iowa, Walter A. Jessup, Ph.D. He pointed out that in education today educators were recognizing variations in individual, mental capacity among students entering educational institutions and that curricular modifications were being made to meet these differences. The medical curriculum is absolutely hide bound. Time allotment for completing the medical course should be selective and not arbitrary and he suggests that an experimental study of the curriculum be made with a view to its liberalization; a wider range of matriculation qualifications but no lower standards, should prevail.

Dr. E. M. Shanklin of the Indiana State Board of Medical Registration continued the discussion from the standpoint of the State Boards of Examiners, pointing out how valuable it would be if the old prejudice against having anyone holding a position in a medical school on a State Licensing Board could be abolished. There is now, he claimed, no excuse for this as there was when most of the laws creating the State Boards were enacted. Co-operation between the State Boards and the medical schools would solve many of their problems and would result in cutting out examination in specialties, in the establishment of more uniform premedical requirements and would bring medical registration law and medical educational advance more nearly into step with medical practice. He urged the continuous operation of medical schools.

The discussion of these two papers brought out the best discourse of the session in a paper by Chancellor Capen of the University of Buffalo. He began by asking the question "Who was to determine the content of University education?" He then proceeded to show how through the activities of the Council on Medical Education, directed through a specific and

wholly commendable endeavor, viz: the cleaning up of the poor medical schools of the country, had succeeded in dislocating all educational interrelations between secondary, high and collegiate instruction and that of the professional schools. As a result of the success of their endeavors, Law Schools, Dental Schools, Colleges of Pharmacy, Library Schools and now even Engineering Schools are discussing or have already formed Councils to bring about what this Council has done, in their own specialties and the standards set have been arbitrarily established by men in the Profession primarily affected. The potential danger in all this is that higher education is being theatened and academic freedom hindered. He believes that premedical requirements should be abandoned as they contribute nothing, either scientific or cultural, to the prospective medical student's equipment and in no way take the place of college training, if that ever was their object.

In the admission to medical schools, the chief weight should be given to evidences of competence to handle the curriculum and to righteousness. Quantitative standards are wholly out of date. Every effort should be made to promote the freedom of University education.

The subject of saving time in education was set forth in two papers on the morning of the second day of the Congress. The first was presented by Charles H. Judd, Ph.D., the head of the Department of Education at Chicago University. He said that our public school system had operated for seventy-five years under local control and therefore there had been very little opportunity for it to become co-ordinated with other educational movements that have grown up with our civilization and that it is high time the Public be made aware of the fact that on that system there is a practical wastage of two years of the pupil's time and this loss occurs in the secondary and high schools. The Junior High School, which should have wide spread adoption, will go a long way to solve the problem of saving time in education. There should be a unified control of organization of all education so that from the moment a pupil is designated for a professional training, his course is planned for him, just as is the case in all European Countries. A boy or girl should be able to commence his higher mathematics at nine or ten, the study of language by ten or eleven, and should be fitted for college by sixteen. There is no necessity for cutting off the college years with their cultural help. One of the surest foundations of intellectual power is reading and this should be cultivated early. He proposed a six year secondary and a six year Junior High and High School course, in both of which science and language should figure heavily for the prospective medical student. Some principle of selection should be applied to discover the adaptable material. Teaching in secondary schools is no longer a routine job; it requires hard work and initiative.

The second paper was read by Dr. Ray L. Wilbur, President of the Leland Stanford University. He pointed out a way in which the present four year courses in the medical schools could be completed in three years without detriment to the work to be accomplished and with distinct advantages in many ways. Long vacations are not necessary—indeed are harmful—and he is sure that students in certain subjects could be left to themselves more than they are with advantage and intimated that it might be of positive advantage, at times, to get them away from their professors. He is of the opinion that less time should be spent in the lecture halls and more in the library and laboratories and the goal of all effort should be the making of general practitioners.

A tri-semester year would enable the student who was obliged to pay his way to drop out at any semester and work until he was in a position to go on; graduation could take place, on completion of the requisite number of semesters.

The second topic of the second session was "Graduate Medical Education" and the first paper was by Guy S. Ford, Ph.D., Dean of the Graduate School of Medicine at the University of Minnesota, and was entitled "The University Graduate Medical School and Medical Science." He maintained the thesis that there is no future to graduate medical education apart from university connection. Research opportunities must be available and the university is the only place where they may be had. There must be provided a growing body of clinical teachers; an adequately prepared student body; a mass of facts upon which to work and contributory science courses to aid in dealing with these facts. Any other conception for graduate medical teaching is futile.

The object of such schools is the production of research scholars and the development of specialists in the various lines of practice. The universality of the bearing of science upon medicine was forcibly pointed out.

Graduate medical teaching is dependent upon all other university departments. Three methods of carrying on graduate teaching may be tried: First, by the single research worker; second, by groups of associated workers within a university, and third, by geographically separated workers.

The second paper was by Dr. Wm. B. Peck of Freeport, Illinois, on "Post-Graduate Assemblies." Dr. Peck is the Managing Director of the Interstate Post-Graduate Medical Association of North America, and gave a very graphic presentation of his views of how to conduct such assemblies, the value of the "dry" vs. the "wet" clinic and what makes a successful gathering of this sort. A good program, a good place to meet and the right treatment of the

press to secure publicly are the three essentials for a successful assembly.

Dr. J. Sundwall of Ann Arbor, Director of the Bureau of Health and Public Instruction of the American Medical Association, described "University Extension Work in Michigan" and showed how the State was suppressing the activities of cults and fakirs by educating the public through university extension lectures on public health matters, not as advocates but as teachers. All the different public health activities of the state joined together to spread this gospel, the expense of sending out the lecturers (only transportation being provided) being borne by the University or some one of the constituent organizations.

In the discussion, Dr. Evans of Wisconsin told of similar efforts in that State to educate the public by distributing a lay copy of the State Medical Journal and Hygiea, giving health information freely throughout the State. It has done much to lay the ghost of the "Medical Trust." In Canada for the past four and one-half years the Provincial Medical Society has been trying to carry the university to the country doctors and one insurance company has aided this endeavor by giving $30,000 to pay for administering this effort.

The importance of research in educational institutions was discussed by Dr. John M. Dodson of Chicago, Director of the Bureau of Health and Public Instruction of the American Medical Association. His interest in research as a part of our educational system pertains to its value as an educational factor, and should be combined with instruction. In medicine every clinician is engaged in research and should be able, in his view, to carry on some research all his life if he systematically goes about it. A university needs to have research going on as a stimulus to its faculty and student body. Unless it is encouraged and supported it is not possible to attract proper teachers to a university faculty. Every medical student should be given some research problem each year. It helps to make them competent at the bedside. It emphasizes in the student's mind the importance of a search for truth. It is admittedly an expensive luxury and should not be a charge upon the student through his tuition but should be financed from special funds.

The last topic discussed on the second day was "An Internship as Part of Medical Education." The first paper was presented by Dr. H. A. Christian of Boston on "Selection of a Hospital for Intern Training." He pointed out that there could be such a thing as a class A hospital so far as the care of patients was concerned but a class C institution from an intern's standpoint. He then discussed the factors that enter into the make-up of a proper intern-hospital training such as laboratory facilities, number of beds, (25 to 50 for a minimum), range of diseases, personnel of the staff and their attitude toward the teaching of interns. The value of a mixed service is questionable if the terms of service are short. Quality and not length should be the standard. An internship must have a definite educational value and this must depend upon the willingness of the staff to teach. He argued against payment of interns. When money payment is held out as an inducement it may be taken as a fair criterion of the value to be placed upon the service by the prospective intern. He concluded that perhaps the best way for estimating the character of the work being done in a hospital was by the number of autopsies they obtained. This was about the only tangible and reliable evidence available for a graduate seeking intern opportunity.

Dr. E. E. Irons, Dean of Rush Medical College, continued the discussion by showing what the purposes of a hospital internship are.

These papers were discussed by some of the chairmen of the Fifth Year Committees.

The morning session of the third day was under the auspices of the Federation of State Medical Boards.

The first paper was entitled "Ten Years of Progress" and was presented by Dr. J. S. Rodman, Secretary of the National Board of Medical Examiners. He pointed out that the National Board is not a licensing board but merely a qualifying board. In the ten years of their existence they have qualified 2642 and the qualifying diploma is recognized by thirty-four states besides the Public Health and Army and Navy services. Also in Great Britain and Ireland their certificates are accepted.

He showed on the screen comparative tables of the markings of the National Board as compared with the markings in the same subjects in the schools whence the candidates came, indicating as a rule a slightly harder marking by the Board.

The examinations of the Board are divided into three parts. Twenty-two per cent. of the failures have been in part I; 11% in part II and 5% in part III. In anatomy the widest divergence was shown between the marks of the schools and the Board. The Board would stress the preparation of students in the schools for general practice and not for the specialties. The Board feels that correlation of premedical and clinical subjects in the schools should be encouraged in the interests of practical teaching, the lack of which possibly accounts in a measure for the greater variance between the Board's and the school's markings in part I of the examination. There is a greater uniformity in the results in parts II and III which are largely clinical. These are carried on in large centers where the character of the teaching is more of a constant. In the twenty years public

health ratings have greatly improved. The Board feels that medical education in the country is fundamentally sound.

This paper and the value of the work being done by the Board was backed up in the discussion by Drs. Arnold, Crowe, Jopson and Dodson.

The second paper was on the admission of foreign medical graduates to licensure examinations, by Dr. Guy L. Connor of the Michigan State Board. The importance of this subject has grown out of conditions which have developed in Europe since the War. In Michigan, among other requirements exacted, is that such a candidate must take an extra year in an American medical school before he may come up for licensure. This plan is followed practically in Rhode Island. In New Jersey the candidate must take an examination in English, file sworn certificate of sources of education and hospital service and have taken out his first papers for citizenship and agree to take the others within six years.

This was further discussed by Wilson from Minnesota and Meltzer of Pennsylvania.

The third paper was offered by Michael F. Guyer, Ph.D., of Wisconsin who gave an account of the activities of the State Board of Examiners in the Basic Sciences. This is the latest effort in Wisconsin to standardize the educational requirements for the right to practice the healing art. They have separate boards of examiners for the various cults and the regular physicians but in accordance with the provision of this law a candidate to practice any branch of the healing art must pass the examination of this board in the basic sciences before he may present himself before his special board of registration. Anatomy, physiology, pathology and diagnosis are the four basic subjects coming under the province of this board. So far no cultist has been able to pass it. They must be certified as to character and high school education. Discussion was participated in by Drs. Dodson, Crowe, McCormick and Ruyperno.

An outline of the plans and scope of the New Commission on Medical Education was presented in the fourth paper of the afternoon session by the Director of the Commission, Dr. W. C. Rappleye. The Commission is composed of representatives of three groups, viz: 1. General and Graduate Education; 2. Medical Education; 3. National Board of Examiners and Federation of Licensing Boards.

The destiny of from 80-90% of all medical graduates is general practice, so the question that the commission is addressing itself to the solution of is, what should prepare a man to best take advantage of the new demands of practice now and for the future? How finance all these problems in connection with medical schools and hospitals? In the latter alone the American people have an investment of $500,000,000. The Commission is also to study the needs of communities for all the kinds of service that pertain to medicine, e. g. morbidity incidence, etc. They are studying absenteeism in industry—the causes for? In rural districts they are looking into the supply of doctors, the schools that provide them, etc. As to medicine, they are trying to work out an "occupational specification" to assist in planning the sort of an education that such "specification" will require. They seek to determine a way to secure the best possible medical service at reasonable cost. They are trying to find out all the various demands that are made upon a doctor and the causes for them.

They wish to determine to whom a medical education should be given, what it should consist of, how and by whom it should be given. In the engineering profession it has been ascertained, by survey, that there is a shortage of engineers of from 20%-30% of the country's needs. The Commission, therefore, is studying the recruitment of physicians. The engineers graduate only about 40% of those who matriculate. In medical schools 73% of those who have matriculated have graduated. Ten thousand, about, are applying for admission to medical schools annually and four thousand are admitted. The Commission is trying to ascertain what becomes of the six thousand who are turned away. They are also studying the length of courses, the curriculum and advisability of double licensure for specialists. All these questions and many more are entering into the survey being made by this Commission. Discussion by Drs. Wilson, Dodson and Christian.

At the afternoon session the first paper was by Dr. Robert L. Rowley, Secretary of the Connecticut Examining Board. He told of the present status of the "diploma mill" fiasco of a few years ago. One hundred and sixty-eight licenses were cancelled and there are on file sixty appeals for the courts to act upon and fifty applicants for renewal of license have been recorded. A new law has been passed and is in very satisfactory operation. It was sponsored by the State Chamber of Commerce. A lay Board has charge of registration in that it sets an examination in the basic sciences which all must pass before they go before the other licensing boards which are composed of their respective cultists or regulars. This is virtually the Wisconsin plan. The subject of diagnosis as well as the basic sciences are required. The Board, though a lay one, has power through an enabling act, to command any expert service in examination they may feel they need.

A high class board was appointed:—A professor of philosophy, a lawyer and a business man, all three of whom had seen service in the Legislature. So far with but one exception,

everyone who has come up for examination has been a medical graduate.

Prof. F. C. Waite of Western Reserve University School of Medicine, read a paper covering an exhaustive study of the ways in which fraudulent medical diplomas have been secured. These studies pertain particularly to the Missouri schools though as a bi-product of the investigation it was quite apparent that it was common practice elsewhere though not so flagrant. The Kansas City Medical School and the St. Louis College of Physicians and Surgeons were the only offenders among Missouri schools but their certificates were bought and sold and the faculty knew it. Attendance was not required. The junior and senior years were identical. Both were for the greater part of the time not more than a one or two year school at the most. According to the testimony of the Dean no sick persons were seen by the students; no hospitals were open to them. In only one year were the trustees called upon to sign the diplomas and without their signature no diploma could be legal. 90% of their students came from other schools. Entrance credentials were freely sold. Credits were given for attendance in dental schools, pharmacy colleges and veterinary schools. Post-graduate and honorary diplomas could be obtained for from $150-$200 and within twenty-four hours of the date of application and these were negotiable. Duplicate diplomas, or what purported to be such, were often issued. How many of these fraudulent diplomas have been issued since 1915 is not known. The writer of the paper has the names of 449. He thinks that a conservative estimate would be that 900 have been issued, domestically.

The Pacific Medical School has engaged in this fraudulent practice. There are said to be about 40.0 of their diplomas extant. These diplomas are not all secured for the purpose of practicing medicine but osteopaths, chiropractors and other cultists find it convenient to have one hanging on the wall. It is impressive in a dental office and sometimes they have been used solely for the sake of social prestige.

THE CAMPAIGN FOR FUNDS FOR THE INFANTS' HOSPITAL

An effort is being made to raise forty thousand dollars to meet current expenses of the Infants' Hospital. Generous responses have been received amounting to $20,463.75, according to a report published by the Treasurer, Philip Stockton.

This institution warrants cordial support. It ought to be easy to raise the balance needed. Physicians may bring this matter to the attention of those who are able to contribute to worthy objects with the assurance that much good will result from the support given to this hospital.

HEALTH AND PHYSIQUE OF SCHOOL CHILDREN

Bulletin, 1925, No. 21 of the Bureau of Education on Health and Physique of School Children, by James Frederick Rogers, Chief of the Division of Physical Education and School Hygiene, is a practical resume of the progress that has been made in recent years in the care of the health of our school children. Steady progress has been made in safe and healthful housing. The importance of adequate and carefully supervised playgrounds has been recognized, and medical inspection, begun fifty years ago in Europe with the examination of vision, has been extended until now it is almost universal. In line with this has been a steady development of dental work in schools, and efforts at improving nutrition have been begun.

Other phases of health progress that are reviewed are the development of open-air schools and open-window rooms, summer camps, special schools and classes, health education, physical training, safety and first aid, pre-school work and teachers' health and training. The parent-teacher organizations also receive their share of mention.

MEDICAL SOCIETY VOTES TO ADMIT LAYMEN

The Kings County Medical Society of Brooklyn, according to the *New York Times*, has voted to admit laymen as associate members who will be permitted to attend and take part in all regular meetings and discussions, but will have no voice in the administration of the society.

In spite of some initial opposition the necessary amendment was carried on the grounds that the plan would create friends of medical progress and enable the public to help organized medicine attack unqualified practitioners and harmful methods. "Associate members," the amendment reads, "shall be persons interested in science or in the service to the public of this society, or members of professions allied to medicine."

Before the change becomes effective the New York State Medical Society must give its approval.

A SYMPOSIUM ON HEADACHE

The Quarterly Bulletin of the Vermont State Medical Society contains a series of articles on Headache which were presented before the annual meeting October 16, 1925.

Dr. Roger I. Lee considered "Headache from the standpoint of Internal Medicine;" Dr. W. Jason Mixter dealt with this subject in its surgical aspects; Dr. George A. Waterman explained the importance of this symptom from the standpoint of neurology; Dr. D. Crosby Greene explained the features of headache in

connection with rhinology and Dr. George S. Derby brought out the problems of headache resulting from eye strain.

This series of papers should be read by all general practitioners, for the information set forth would help any doctor who is brought in contact with patients presenting this common symptom. We presume that the supply is limited but if the demand is sufficient to warrant we presume that reprints will be made.

RECENT DEATH

KELLEHER—Dr. William Lawrence Kelleher, a Fellow of the Massachusetts Medical Society, died at Marlborough, of pneumonia, January 16, 1926, at the age of 32. He was a graduate of Tufts College Medical School in 1923 and joined the State society in 1925.

OBITUARIES

DR. HENRY RUST STEDMAN

Dr. H. R. Stedman, long associated with the best traditions of Boston medicine, died at his home, 52 Upland Road, Brookline, February 19, after an illness of several months. He was born in Boston, September 19, 1849, son of Dr. Charles H. Stedman and Lucy (Ingalls) Stedman. His grandfather, brother, and an uncle were also physicians. He was prepared for college at the Boston Latin School, entered Harvard College, graduating in the class of 1871, and later taking the degree of M.D. at the Harvard Medical School in the class of 1875. He served as a surgical house-pupil at the Massachusetts General Hospital, and also had a medical service at the Boston City Hospital.

General practice made no appeal to him, and early in his medical career he took up the practice of psychiatry, which became his life work. To perfect himself in this difficult field, he served for a time as assistant superintendent of the Danvers State Hospital, and later became an assistant in the Edinburgh Royal Asylum and the West Riding Asylum at Yorkshire, England, where he came in contact, to his lasting benefit, with the leaders of psychiatry in the British Isles.

On his return to this country he established, in 1884, a hospital for the private treatment of mental disease at Forest Hills, a suburb of Boston, later removing to Brookline. To the interests of this hospital, accommodating not more than twenty patients, he devoted much of his time and thought for thirty-four years. Toward the latter part of this period, feeling with advancing years the desirability of sharing the responsibility, he took as his associate Dr. George H. Torney, to whom he finally relinquished the management of the hospital, but not his interest in its progress and welfare. It will long stand as a monument to his ideal of what such a hospital should be, a refuge for the mentally afflicted, approximating as closely as possible the conditions of their homes.

His devotion to the development of this hospital rather stimulated than discouraged his interest in the wider problems concerning the care of the insane and his work toward a better understanding and more sympathetic treatment of mental disorder stands out as one of his preëminent achievements. Many of the measures which are now accepted without question or dispute were met with indifference if not actual opposition forty years ago. The pioneer work which he did should not be forgotten or underestimated. The question of "state care," and the discussion which led up to it, absorbed much of his time and energy. He made a series of visits to city and town almshouses, and unearthed many defects and actual abuses in the custodial type of treatment then in vogue. This was a thankless task, well and courageously performed. It has resulted in the exclusive adoption of "state care" for this type of dependents.

In 1909, Dr. Stedman was appointed by Governor Guild a member of a State Commission to revise and codify the laws of Massachusetts concerning the insane. From the efforts of this commission, a beginning was made toward a proper examination of the mental condition of criminals. Another matter to which he gave much thought was a plan for boarding out certain of the chronic insane from institutions, a step toward a more rational attitude regarding the whole problem of treatment. From the first he identified himself with the mental hygiene movement in Massachusetts and in the country at large, and saw in its growth a sure sign of a better lay understanding of the problems of mental disease. He was one of the founders of the Monson State Hospital for Epileptics, thereby establishing separate care for this unfortunate class of patients, and an ardent advocate of "after care," a precursor of the "follow up" system, which the social service movement has done much to foster and develop. Although he never sought distinction as a medico-legal expert, he was not infrequently called upon to testify in civil or criminal cases involving questions of mental responsibility. In general, it may be said of him that he combined in unusual degree interest in the individual patient under his supervision with the broader social and political aspects of mental defect and delinquency. It was a constructive period, and he did much toward building the present stable structure, which happily he lived to see realized.

Dr. Stedman's medical writing, though not extensive, was always characterized by extreme care in presentation, and many of his papers stand as the first expression of the reforms in which he took so keen an interest. Among these papers may be mentioned "The Family System as an accessory provision for our poor," pub-

lished in 1890, "The need of popular lectures on insanity," in 1897, "The after-care of the insane," in 1899, "A programme of practical measures for mental hygiene work," in 1914.

For upwards of twenty years, he was a trustee of the Taunton State Hospital; he was a member of the American Neurological Association and its president in 1906; he had also been president of the Boston Society of Psychiatry and Neurology, and of the New England Society of Psychiatry, director of the Executive Committee of the Massachusetts Society for Mental Hygiene, and a member of the National Committee. He held membership also in the American Medical Association, the American Psychiatric Association, the New York Psychiatric Society, and the Massachusetts Medical Society.

Dr. Stedman stood for all that is best in medicine. His devotion to psychiatry, during the dark days of its claims for recognition as an integral part of medical science and practice, materially helped to bring the subject into its legitimate relation to medicine as a whole. He saw the wide implications of psychiatric research and did his share toward making possible the development of later years. Personally he was modest, somewhat self-depreciatory, generous to a degree, a good and lasting friend to young men, and a loyal colleague,—a man of rare and sterling qualities. He married Miss Mabel Weiss in 1879, who up to the time of her death in 1917 was an unfailing source of help and encouragement in the solution of the many problems which met him in the course of his professional life. He is survived by a son, John W. Stedman of Morristown, N. J., and two daughters, Mrs. Albert Hale and Miss Anne Bradstreet Stedman, both of Brookline.

E. W. T.

DR. CHARLES ELLSWORTH MORSE

Dr. Charles Ellsworth Morse, medical examiner for the fourth Plymouth District, died on February 16 at his home in Wareham of cerebral apoplexy.

Dr. Morse was born in Wareham in 1867, the son of Seth T. and Mrs. Morse. He received his early education in Wareham, and graduated from the Harvard Medical School in 1892. For four years following his graduation he practiced in Jamaica Plain, spending part of that time at the Adams Hospital. For the past 31 years he had been a resident of Wareham, serving as medical examiner since 1907.

He was a member of the American Medical Association, the Massachusetts Medical Society, the Medical Library Association, the New Bedford Harvard Club, the Lotus Club of Wareham, the Elliott Lodge of Masons of Jamaica Plain and the Jamaica Plain Independent Order of Odd Fellows. He served on the local board of Selective Service Officials from 1917 to 1919.

He is survived by his wife, Mrs. Abby Morse, a daughter, Sylvia, and a sister, Mrs. T. J. Le Baron, all of Wareham.

CORRESPONDENCE

PUBLIC SCHOOL MENTAL CLINICS

Mr. Editor:

Permit me to comment on your able and timely editorial, "A Startling Menace" (February 4, 1926), in which you call attention to the destructive and costly effect on society of persons mentally diseased; the ignorance and indifference of society in general to the subject; the imperative need for measures of prevention. You cite certain of the organized efforts of the Commonwealth to inquire into various aspects of the question. The picture you draw is indeed dark, but I think there is also a hopeful side which you omit to mention, and that is the preventive and constructive work that is being done by the State public school clinics.

In 1919 the Legislature enacted a law that provides for the examination of children "three years retarded in mental development who are in attendance on the public schools or who are of school age." The law, as you no doubt recall, was sponsored jointly by the Departments of Education and of Mental Diseases and was made possible chiefly through the far-sighted wisdom and public-spirited devotion of Dr. Walter E. Fernald. The work is now directed by Dr. Harvey M. Watkins of the Department of Mental Diseases and is being carried on throughout the State. The entire State has been districted and each district assigned to one of the State hospitals, which provides a staff of examiners consisting of a psychiatrist, a psychologist, one or more social workers, while the school supplies the essential information as to the school history, conduct, etc., of the pupils, and a teacher specially trained to give the pedagogical tests. The service is available without expense to every public school in the State—and no doubt could be extended to the parochial and other private schools if they should request it. This contribution of the State hospitals to the cause of mental hygiene in its broadest sense is, I think, not generally understood by the public.

The School Clinics have been in operation about four years. Many thousands of children have been examined and as many particular treatments recommended. Curiously enough it has been found that it is not only the varying degrees and types of intellectually defective pupils who come into the clinic for examination but often those of normal intelligence as well, whose school failures are related to psychopathic, neurotic or epileptic states; to home neglect, to physical handicap or other conditions.

By means of the thoroughgoing study that is given each case, the School Clinic has little difficulty in diagnosing the underlying trouble nor in seeing with reasonable certainty what treatment is needed to correct it. But there is some difficulty in getting the treatment carried out. When the Clinic sends back to the school authorities such reports as the following: "This pupil has reached the limit of his academic ability, should now have practical vocational training, is psychoneurotic, needs prolonged and careful study; is in danger of becoming delinquent, needs social supervision and protection; is a neglected child, needs better home care; is a neurological, a cardiac or otherwise physically handicapped case, needs to be taken to such and such a clinic"; or any one of the various specific recommendations, the schools are often unable in a complete or comprehensive way to carry out the advice given because they have no personnel for that purpose. The teach-

ers have to stay in their class-rooms. The school nurses, often only one or two to thousands of pupils, have to inspect hair, teeth, skin eruptions, and safeguard the physical health generally. There is no authorized person to attend to such deferred contingencies as criminality, insanity, dependency.

Except for remedial measures having to do with the scholastic work which naturally the school can attend to without outside assistance, all the special treatments thus far accomplished as a result of the School Clinics' recommendations have been through direct appeal to parents or through the personal efforts of principal, teacher or nurse, who have added to an already overcrowded day the duty of connecting the children with a children's agency, a club, a clinic, etc., which has carried out the advice.

The greatest need now is perhaps not so much for "a Moses to lead us out of the bondage of ignorance, superstition and indifference" in these matters as it is for trained social workers (visiting teachers) in every school who will work in conjunction with the School Clinic, to bridge the gap between the school and the home so as to put into effect the measures which promise to be preventive. We need of course also more playgrounds and recreational and health centers. Especially we need, in almost all communities, more courses in practical training for children who have ceased to profit by the regular grade instruction. To stand an erratic, unstable boy (age 12 or 14) in the corridor for a half-day because he cannot learn his lessons and creates a disturbance in the class-room is not good mental therapeutics. Yet in many schools it is about the only procedure possible because there is no workshop class which would provide a satisfactory outlet for boredom with and mal-adaptation to academic work that is beyond his comprehension or nervous control.

It is just about as easy to recognize the prodromal signs of a case of mental disease, of delinquency, of anti-social reaction in general as it is to recognize the prodromal signs of measles, and it may be just about as easy to treat the former to a successful outcome as it is the latter, but it requires more time, more money, more adjuvants of various kinds. When we stop to consider that the great majority of the persons who twenty or thirty years hence will be the patients in the mental hospitals and the inmates of the prisons and reformatories are today in the public schools, the school would seem to be the logical and effective place to institute preventive measures. The School Clinic is already operating in that field. If its work is to yield results commensurate with its possibilities, if it is to help to reduce, or even to keep stationary, those several millions of dollars now spent in institutional care, there must be more money spent now in dealing with these social maladies as encountered in their early manifestations in the schools.

ALBERTA S. GUIBORD, M.D.,
Boston State Hospital
(School Clinic).

February 17, 1926.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING FEBRUARY 20, 1926

Diphtheria	56	Chickenpox	116
Last week	41	Encephalitis epid.	2
Diphtheria bacilli carriers	19	German measles	9
		Influenza	13
Typhoid fever	3	Mumps	15
Last week	3	Paratyphoid fever	2
Scarlet fever	91	Pneumonia, lobar	57
Last week	78	Septic sore throat	2
Whooping cough	72	Tuberculosis, pulmonary	31
Last week	68		
Measles	787	Tuberculosis, other forms	4
Last week	545		
Anthrax	1	Gonorrhea	10
Bronchopneumonia	38	Syphilis	22

NEWS ITEMS

DR. ALEXANDER S. BEGG and DR. SAMUEL R. MEAKER attended a meeting of the Council on Medical Education of the American Medical Association held in Chicago from February 15 to 18.

PHI CHI—The annual banquet of the Beta Upsilon of Phi Chi, of Boston University School of Medicine, was held at the Fritz-Carlton Hotel, Saturday evening, February 27, 1926, with Dr. Clarence Crane as toastmaster. The pledges were initiated, followed by a meeting of the alumni, at which Dr. Thomas E. Chandler presided.

NOTICE

POSTGRADUATE GUIDE FREE

THE Cunard Line is distributing gratis "The Official Medical Guide of Postgraduate Work in Hungary". The book contains 100 pages and is intended for English-speaking physicians. It will be mailed to any address upon request to the Company's main office, 25 Broadway, New York.

REPORTS AND NOTICES OF MEETINGS

NEW ENGLAND PEDIATRIC SOCIETY

THE ninety-sixth meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, March 12, 1926, at 8:15 P. M.

The following papers will be read:

I. A Synoptic Account of the More General Aspects of Tuberculosis in Children, Allan S. Krause, M.D., Baltimore.

II. The Value of the Preventorium in Tuberculosis Work, Walter A. Griffin, M. D., Sharon.

Light refreshments will be served after the meeting.

JOHN LOVETT MORSE, M.D., *President.*
JOSEPH GARLAND, M.D., *Secretary.*

THE NEW YORK ACADEMY OF MEDICINE

THE New York Academy of Medicine is holding a stated meeting March 4, at 8:30 o'clock. Section meetings are being held March 2 to March 12.

HARVARD MEDICAL SOCIETY

THE next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, Mar. 9, 1926, at 8:15 p. m. The program follows:—

1. Demonstration of Cases.
2. Inflammatory Conditions in Bone—Dr. Clarence L. Starr, Professor of Surgery, University of Toronto.

All members of the Medical Profession, Medical Students and Nurses are invited.

S. A. LEVINE, M.D., *Secretary.*

POSTPONEMENT OF THE MEETING OF THE NEW ENGLAND HEALTH INSTITUTE

DR. CHARLES DUNCAN, Secretary of the State Board of Health of New Hampshire, has announced the postponement of the meeting of the New England Health Institute until the last week in September (September 27 to October 1).

The first announcement was for the meeting to be held in Concord, New Hampshire, in May. Later announcements will give details.

BOSTON HEALTH LEAGUE INC.

THE next meeting will be held March 10th, at the North End Health Unit, 41 North Margin Street, at 3.30 P. M. Dr. Susan M. Coffin, Physician, Division of Hygiene, Massachusetts Department of Public Health, will speak on "Maternity Risks in Massachusetts: A Study of 984 Deaths."

MASSACHUSETTS HOMEOPATHIC HOSPITAL

THE February meeting of the Massachusetts Homeopathic Hospital was held February 26, 1926, at 8:00 P. M., in the Evans Memorial Auditorium. A paper was presented by Dr. Carroll H. Keene on Some Practical Uses of the Electrical Current. Discussion was opened by Dr. A. H. Ring. Following this, Dr. C. T. Howard presented a paper.

MEETING OF NEW ENGLAND ASSOCIATION FOR PHYSICAL THERAPEUTICS

THE regular meeting of the New England Association for Physical Therapeutics was held at the Hotel Victoria, 271 Dartmouth St., Boston, Mass., Tuesday, Feb. 23rd, at 8 P. M.

Subjects: Surgery of the Forearm and Hand, by William Edward Browne, M.D., Boston, Mass. (Dr. Cotton was invited to open the discussion.)

History, Physics, Biological, Effects and Technique of Radium Application, by G. Allen Robinson, New York City.

THE MEETING OF THE TRUDEAU SOCIETY

THE eighth meeting of The Trudeau Society of Boston was held in John Ware Hall, the Medical Library, on February 9, 1926.

The meeting was called to order at 8:20 P. M., Dr. Cleaveland Floyd in the chair. The records of the last meeting were read and approved. The report of the committee on The Smoke Nuisance was read by Dr. Vincent Y. Bowditch, Chairman, as follows:—

"Your committee was appointed on December 8th, 1925, to look into the smoke nuisance in the city of Boston. After a survey of the situation, we beg leave to suggest that one of the two following plans may be adopted—

"First—A record of protest—That the Trudeau Society believes that the present smoke nuisance is to a large degree, avoidable and is due to the un-intelligent and un-economical use of bituminous coal, oil and the improper adjustment of carburetors and the use of oil in automobiles, which may and could be abated to a large degree. That the present educational and medical instruction for the use of fresh air as a health measure, is to a great degree offset by these needless nuisances, and that the enforcement of existing laws by the proper officials, and instruction in the methods of firing soft coals, will eliminate to a very large percentage the present nuisance. On the return of the general use of anthracite coal, its use be encouraged for the health and comfort of the community.

"Second—A campaign for abatement—That a committee of three be appointed to undertake and apply the proper methods to aid in the elimination of the smoke nuisance. That this committee be authorized to solicit, collect and expend the funds collected to meet the campaign necessities as they may arise, and that this committee be authorized if it deems advisable, to invite a voluntary, advisory associate committee that may include a combustion engineer, a health officer, a lawyer, a member of the Retail Merchants' Association, a member of the Manufacturers' Association, and representatives of such other groups that they may determine to aid in its activities. It is understood that this campaign be one of instruction and education, but of prosecution only when constructive measures fail."

On the motion of Dr. John B. Hawes, 2nd, it was left in the hands of the President and Secretary.

Dr. Horace LoGrasso, of the J. N. Adam Memorial Hospital, Perrysburg, N. Y., then read a paper on Heliotherapy.

Dr. LoGrasso gave a detailed description of light and described the various lamps used in heliotherapy at the present time. In a comparative way he seemed to feel that sunlight could only in a very minor degree, be imitated by artificial methods. He then gave an outline of the methods carried out at Perrysburg by the use of sunlight; called attention to the necessity of very accurate control in the application of light to patients, this light being only a factor to be used in conjunction with proper rest and food.

He spoke of the necessity of the application of sunlight commencing with the feet, following up the legs, thighs, abdomen, arms, head, and finally the chest. He said he considered the morning or late afternoon light safer than midday, except in the winter months, and felt that there is great danger in not protecting the bod-

ies from currents of air while exposed to the sunlight, and that he felt that one of the great benefits to the development of muscle and an aid to reconstruction of tissue, rested with the exposure to air.

He said that at Perrysburg there had been no limits placed as to age in carrying out the sunlight cure.

He then showed a series of slides which demonstrated the value of sunlight in the various bone, glandular and abdominal conditions due to tuberculosis. He also exhibited some slides of children who had been treated for tuberculosis of the eyes. The time of the treatment in these cases seemed to be entirely dependent on the progress made, the indicator being largely the depth of the tan acquired.

Dr. LoGrasso here explained the fact that the tan depths were not always essential because there were certain types of skin which do not take the tan easily but there are skin changes, which one through contact, learns to recognize as good indicators in such cases.

A moving picture reel was then shown exhibiting the various activities of the hospital at Perrysburg, and of the patients. Various types of beds were shown, also the use of pillows and adjustable beds for the correction of deformities.

Dr. LoGrasso called attention to the simplicity and rarity of the use of apparatus in treating these cases. He made reference to the extremely valuable use of sunlight in the treatment of rickets. During the exhibition of the pictures, he demonstrated very vividly the development of the Perrysburg plant, from the shanty built by the patients to the present sanatorium, and spoke of coming additions.

Discussion of the paper was opened by Dr. Richard H. Miller, and continued by Dr. B. V. Adams, Dr. Richard M. Smith and Dr. John B. Hawes, 2nd, the trend of their comments being essentially of approval and complimentary to Dr. LoGrasso's achievements along the lines of heliotherapy.

The attendance was 187.

GEORGE S. HILL, M.D., *Secretary.*

The discussion of Dr. LoGrasso's illustrated paper on "Heliotherapy" follows in detail.

DISCUSSION

DR. RICHARD H. MILLER, Boston: I don't think we can give enough thanks to Dr. LoGrasso for this interesting presentation and I am sure no one could afford us a more conclusive demonstration of what he was trying to prove. There is very little anyone else can add.

My interest in tuberculosis dates back a few years when I took over the Clinic at the Massachusetts General Hospital which is called the Non-Pulmonary Tuberculosis Clinic. There we have seen a number of cases of surgical tuberculosis and a smaller number of genito-urinary tuberculosis cases inoperable and tuberculosis of other parts of the body. We have appreciated from the beginning the great value of heliotherapy. We had followed Rollier's work. The thing which he has been able to do which we have not is that he has been able to control the use of heliotherapy. We had patients who were conscientious to whom we gave instructions as to the use of sunlight and we do know that in certain ones there was a tremendous benefit, and I am sure we never saw a conscientious patient who took sun baths in whom there was no benefit.

We think that Rollier is wrong in saying that all cases of surgical tuberculosis should not be operated upon. Certainly that isn't so, and there are many cases where operation is indicated. Rollier also says that every case of localized surgical tuberculosis is a manifestation of a systemic tuberculosis. In most instances that is true, but we do not agree with him in the case of tuberculosis of the glands of the neck, at least in the early case. I am convinced that though there may be tuberculosis elsewhere, while there is tuberculosis in the glands of the neck, in the majority of cases that come to us early they are the first manifestation of tuberculosis getting in through the tonsils, and those glands enlarge before there is tuberculosis elsewhere in the body and it is not a manifestation of generalized tuberculosis.

We treat our cases by heliotherapy as much as we can and by the artificial lights which we think are effective especially in the cases of superficial sinuses which do not heal. We have tried the X-ray with disappointing results and that bears out what Dr. LoGrasso said was his experience. We had one case that had extensive glands on both sides of the neck who immediately developed a miliary tuberculosis after X-ray treatment and died.

We have used tuberculin for a good many years and still think it does good. It probably has to be limited to a certain number of cases and can't be depended upon.

The more we see of tuberculosis of the glands of the neck, the more we are inclined to operate on them, but Dr. LoGrasso is right in saying that every case should be treated with heliotherapy, and if operation is advisable, the case should be treated before and after operation with heliotherapy.

DR. Z. B. ADAMS, Boston: I also want to add my thanks to those of Dr. Miller to Dr. LoGrasso. He has given a very excellent idea of his work at the sanatorium at Perrysburg. I had an opportunity of going out there to see the institution. What he has shown you to-

night gives you a very good idea of just what goes on there.

Now this treatment by heliotherapy is one that has been practised in other countries for a great many years, not only by Rollier at Leyden in Switzerland but also by the French at Burk Plage in France. There are several large sanatoria on the English Channel where heliotherapy is carried out in a very scientific way.

Now the question of just what heliotherapy does I don't think anyone can answer, but what it seems to do is that it increases the resistance of the individual to tuberculosis. As Dr. LoGrasso has said, these patients many of them show two lesions, and the question isn't I think in glandular tuberculosis of whether the patient has the glandular tuberculosis as a primary focus or the tonsil is the place of entry and the glands are secondary to the tonsil—probably that is the sequence; but I think all these patients and the pulmonary cases too have a lowered resistance to tuberculosis, and apparently the treatment by heliotherapy and fresh air increases the resistance.

Now about tuberculin—I don't want to take that matter up with Dr. Miller, but that has been worked out pretty thoroughly; I say "thoroughly"—there have been a number of cases run through and there still is a great diversity of opinion. Many of the sets of cases that have been treated by tuberculin have been treated by other methods as well, and I don't think that it has ever been really shown that tuberculin did much of anything.

The other thing I want to mention is this:—Dr. Remick has succeeded in having a hospital established in the State of Massachusetts where surgical tuberculosis can be treated by heliotherapy, and that hospital is now open at Lakeville, and they are carrying on systematic heliotherapy treatment for surgical tuberculosis there.

Dr. Richard M. Smith, Boston: It is hardly necessary, it seems to me, to emphasize the importance of heliotherapy in dealing with tuberculosis in children because you have undoubtedly noticed that a large majority of the patients shown by Dr. LoGrasso tonight have been children. It has been our experience that in children who have tuberculous peritonitis and localized tuberculosis in the glands and bones heliotherapy is of a very great benefit. Nothing that I could say would emphasize that fact more than the pictures and words of Dr. LoGrasso.

There is one matter which he spoke of very casually which I would like to emphasize. He said that they were other conditions that were also benefited by heliotherapy and he mentioned rickets as one of them. You will notice that there were very few infants shown in the pictures. It is rather difficult to give heliotherapy to infants as it is given in Perrysburg because it is difficult for them to exercise sufficiently in the open air so that it seems to me that we can get from the use of the lamp, perhaps a poor substitute, but nevertheless a substitute which gives satisfactory results in the cure of rickets, and, of course, rickets appears almost entirely in young infants. I think that in this particular condition the artificial sunlight accomplishes a great deal which would have been difficult to accomplish by the use of the sun's rays because of the difficulty of keeping the patient warm under the sun's rays outside.

I wish to agree with Dr. Miller that surgical tuberculosis is sometimes the first and only manifestation we can detect of tuberculosis in many instances, and in these instances the eradication of the glands themselves leads to the elimination of the disease. I think we all appreciate the value of heliotherapy in these conditions.

Dr. John B. Hawes, 2nd, Boston: It is a great pleasure to listen to a man who knows what he is talking about whether he be a great musician or violinist or engineer. If he can do more of any one thing than anyone else, it is a rare privilege to hear him, and that is the way I feel about Dr. LoGrasso. He has been giving medicine to us skeptics around here. We of Boston are from Missouri and want to be shown, and he has shown us. I find it difficult to conceive of myself wandering around in the snow as was shown and I find it hard to persuade my patients, and I didn't need to have Dr. LoGrasso tell me so, but it is an excellent thing to have him tell us about it.

Dr. Adams' criticism of tuberculin might apply to what Dr. LoGrasso said about heliotherapy, and that is that there are other methods that work there, and it is that there are other things besides sunlight; there are other factors, the question of the moving fresh air has something to do with it, the lying at rest, the proper food and fresh air, but I do admit that heliotherapy, the actual side, is a great big factor.

His remarks on pulmonary disease—as I told him frankly before this meeting, I would be sorry to have his remarks on the treatment of pulmonary disease with heliotherapy go out broadcast among all of us because we are not apt to remember those "ifs." He said he believed that sunlight and heliotherapy were of great value in treating pulmonary tuberculosis if, and one of those "ifs" was "if judiciously applied," and the second "if" was "if proper precautions be taken." We doctors are looking for short cuts. The treatment of pulmonary tuberculosis is a long process; and here is one thing—"stick them out in the sun and get a tan on them and you will cure consumption." But you will not, and we all know it; and there are those "ifs" which he mentioned. I remember

a young fellow who went down about this time to Florida and he had heard about heliotherapy and he stripped himself and got a splendid tan and he came back here and died. He did not use those "ifs"—"if proper precautions are taken."

I was delighted to hear what he said about lamps. The Alpine lamp and other lamps make a great hit with the patient. You pay ten dollars and get your skin tanned and you think that you have got your money's worth. You could use a lamp for anything even an ingrowing nail. I think there is a great deal of money invested in lamps in Saranac by boarding house keepers who lend these lamps out. But the patients swallow these lamps—hook, bait and sinker. We have got to use sense about using these lamps. But I think Dr. LoGrasso has used sense and he has shown us what a God giving thing this sunlight is, and it can be used right here in New England as our climate is just about the same as in New York. But he has spoken sanely, he does not say that heliotherapy is the only thing—it is heliotherapy plus rest, plus proper food, plus supervision by men such as Dr. LoGrasso, plus common, God-given sense.

Dr. Horace LoGrasso, Perrysburg, N. Y. (closing): Dr. Smith asked the question whether we had very many infants. We do have quite a number of infants at the present time. You must remember that Perrysburg admits only tuberculosis cases, but lately we have accepted rickets, and we have a large number of cases of rickets which have improved under the sun cure. There is no trouble in giving sun cure during the summer months. Of course, in winter there is difficulty, and I don't make any attempt to give sun cure to infants in the winter months because of the possibility of getting wet and chilled, not that it can't be done, but we haven't the available help to give it in the winter months.

As far as getting the same results with the lamp I cannot say as far as rickets is concerned. I have never used the lamp on rickets but I know that we can not only cure rickets in infants but we can also build them up, and that is something that the lamp cannot do that heliotherapy will do. Also I agree that it is a difficult thing in infants.

As to giving it in pulmonary disease, Dr. Hawes is absolutely right that unless heliotherapy is given properly and judiciously and with the use of common sense in the selection of your cases and unless precautions are taken as against breezes striking the body, heliotherapy is dangerous. We had cases who took upon themselves to take sun treatment and instead of exposing themselves gradually they went out and exposed the chest for hours at a time with the result that hemorrhage took place and they had aggravation of the disease; but we never have had a case of hemorrhage in a case in which we interested ourselves while taking the treatment of heliotherapy. While the sun seems a mild thing, it has sharp teeth if not properly applied. Therefore I want to emphasize that I believe heliotherapy is important in pulmonary disease and that we get as good results as in surgical tuberculosis, I will say that you must have the proper observation from people who can take the time and trouble in watching the patients.

There was a question asked as to how we started at first. When we started our heliotherapy we had nothing but the determination of Dr. Prior who told me to go ahead and do it. He said "get Rollier's book and translate it and go ahead," and I did translate it as well as I knew how and then I tried sunlight on myself, and when I was satisfied that it didn't harm me and after my own experience I found that I had to take certain precautions, I took my first patient in the winter of 1913, in November. And then in the summer time we got tents from the Day Camp in Buffalo and housed our patients in tents, and then our patients built the shack which I showed, and then our results were so good that Dr. Prior went to the mayor of Buffalo and asked for $15,000. The mayor was interested and thought we should ask for more. Then we asked for $150,000, and the buildings were built. Then the results were so good that we asked for additions as we had a long waiting list all the time, never less than 60; and the additions today cost us $3,500,000. And that is the history of our institution. Today we have 430 patients, and that number will be increased to 500 inside of six weeks.

BOSTON MEDICAL HISTORY CLUB

A regular meeting of the Boston Medical History Club was held February 15th, 1926, at the Boston Medical Library

Dr. Isador H. Coriat read a short communication on "An Early Edition of Rabelais." Rabelais, whose date of birth is uncertain, graduated from Montpellier in 1530 and, after teaching a few months, went to Lyons. In the latter city, while teaching and demonstrating human anatomy for the first time in France, he edited for Sebastian Gryphius the "Aphorisms" of Hippocrates and the "Ars Parva" of Galen (1532). His best known works, "Pantagreul" and "Gargantua" appeared in print within the next few years, but there has been much discussion in regard to the exact date and order of publication. This controversy has recently been cleared up by the efforts of Pierre Champion ("Deux publications des Lyonnais de 1532", 1925), who has issued a facsimile edition of the "Pantagruel" with the date 1532, but without printer's name or device. This book contains the germ of Rabelais' later work, the first

signed edition of which appeared in the next year, 1533. Previous to Champion's investigations it was usually considered that Rabelais' work on Gargantua, the father of Pantagruel, was written and published prior to his "Pantagruel."

Dr. Henry R. Viets read a paper on "Some Notes on the Treatment of the Insane." After reviewing the general conditions of the insane hospitals in the latter part of the 18th century, he spoke of the work of William Tuke, who founded the York Retreat in 1792, one of the first hospitals where the insane were treated without restraint. The work of this hospital has been carried on by the son, grandson, and great-grandson of William Tuke—all Quakers. Its early influence was widespread. A description of it soon appeared in Germany, and Tuke's work was well known in France.

Pinel began his investigations about the same time but did not learn of the work at York, England, until some years later. When the Bloomingdale State Hospital at White Plains, New York, was being organized, the advice of Samuel Tuke, grandson of William Tuke, was obtained in the form of a letter, the manuscript of which has recently come to light.

Dr. E. W. Streeter spoke of the famous "Spital sermons." These were established as early as Tudor times and were given in St. Mary's Church in Spitalfield, on the first Sunday in Lent. They were usually attended by royalty and the leading members of society. Contributions were made to the hospital from the collections at these meetings. Thus the better class of people were reasonably well informed in regard to some of the conditions at such hospitals as Bedlam.

Dr. Joseph W. Courtney pointed out that many reforms and discoveries in medicine have been made by laymen such as William Tuke.

Dr. William P. Coues presented a paper on "Pierre Fidèle Bretonneau" (1771-1862). He pointed out that Bretonneau had never been given proper credit for his work on either diphtheria or typhoid fever. Bretonneau gave the first adequate descriptions of both of these diseases and checked his work by elaborate postmortem studies. This Tours physican was reticent about publication and it is only through his students, especially Velpeau and Trousseau, that his work came to light at all. Much of the credit for his clinical investigations had been given to Louis, until recently Triaire pointed out the value and priority of Bretonneau's work. By his determination of specificity Bretonneau foreshadowed the germ theory of disease and made several valuable contributions to therapeutics. Credit is given to him also for putting the operation of tracheotomy in diphtheria on a firm foundation, although it had been performed in the 16th century by Brassavola.

Dr. Coues reviewed briefly Bretonneau's life and spoke of his wide-spread interest in botany and other subjects. He mentioned the centenary meeting held in 1922 in Tours, where Bretonneau did most of his work. He said the chateau country around Tours is often called the "Bretonneau country," a beautiful courtesy to a brilliant physician.

Dr. E. W. Streeter spoke of the early operations for intubation before the days of Bretonneau. He said that there is a good deal of evidence that this operation must have been done even in ancient times, and it was certainly done in Italy by men who were trained as physicians, as well as by the surgeons as an emergency operation. Brassavola gives a description of the operation, which he learned by dissection of animals. Diphtheria was epidemic in Europe in the Middle Ages and there are many allusions to it in the 15th century literature.

Mr. Ballard showed a beautiful copy of the "Epitome" of Vesalius, which has recently been obtained by the Boston Medical Library and is said to be the finest copy in existence.

INTERNATIONAL MEETING OF THE NATIONAL TUBERCULOSIS ASSOCIATION

Preliminary arrangements for the international meeting of the National Tuberculosis Association indicate that several of the leading tuberculosis specialists from different European and other foreign countries will be in attendance. The meeting will be held in Washington, D. C., October 4 to 7, immediately following that of the International Union Against Tuberculosis, which meets in the same city, September 30 to October 2.

Among the distinguished men and women who have definitely promised to attend and address the meetings of the National Tuberculosis Association are Sir Robert Philip, the founder of the world-famous dispensary system of Edinburgh; Col. S. Lyle Cummins of Cardiff, Wales, director of the King Edward the Seventh Research Foundation for Tuberculosis; Dr. G. B. Roatta of the Tuberculosis Dispensary of Florence, Italy; Prof. Gaetano Ronzoni, Professor of Medicine at the University of Milan, Italy; Dr. Vittorio Ascoli, Professor of Medicine at Rome; Dr. Leon Bernard of Paris, Professor of Hygiene, and Secretary of the French National Tuberculosis Association; Dr. Edouard Rist of Paris, Physician to the Laennes Hospital; Dr. Ferdinand Sauerbruch of Munich, one of the world's leading authorities on chest surgery; Prof. Frederick Neufeld of Berlin, Director of the Robert Koch Laboratories; Prof. Lydia Rabinowitch of Berlin, one of the foremost bacteriologists in Germany; Dr. Ernst Loewenstein of Vienna, a famous Austrian bacteriologist,

and Prof. Hans Christian Jacobaeus of Stockholm, Sweden, known throughout the world for his skill in surgery of the chest. It is expected also that among others who may attend the meeting will be Dr. A. Rollier of Leysin, Switzerland, a leading authority on heliotherapy; Dr. F. N. Kay Menzies of London, authority on colonies for cured cases of tuberculosis, and Sir George Newman of London, Minister of Health of Great Britain.

A number of other European and Asiatic tuberculosis specialists have also been invited to attend this meeting. It is anticipated that in quality of material to be presented this international meeting of the National Tuberculosis Association will excel any similar gathering since the International Congress on Tuberculosis of 1908.

Special arrangements will be made for interpreting foreign language papers. All of the papers will be published in the annual volume of Transactions of the National Tuberculosis Association. The sessions of the National Tuberculosis Association are open to all persons interested. The sessions of the International Union Against Tuberculosis are open only to members.

Further information about either of these meetings may be obtained from the National Tuberculosis Association, 370 Seventh Avenue, New York City.

MEETING OF RESERVE MEDICAL OFFICERS

Headquarters First Corps Area,
Office of the Corps Area Surgeon,
Boston, Mass.
February 27, 1926.

THE next meeting in the Winter Training schedule for Reserve Medical Department officers will be held at the Medical Library, 8 Fenway, Boston, Mass., on March 10, 1926, at 8:00 P. M.

You are urged to attend and bring a Reserve officer or some Doctor who might become one with you.

HENRY S. BECKFORD, *Major, M.C. (DOL.)*

MASSACHUSETTS LEAGUE OF NURSING EDUCATION

THE Massachusetts League of Nursing Education will hold its institute at the New England Women's Club, 585 Boylston St., March 10-13 inclusive.

MASSACHUSETTS GENERAL HOSPITAL

THE usual monthly clinical meeting of the Massachusetts General Hospital will be held on Thursday, March 11th, at 8:15 P. M. The program is as follows:

1. Presentation of cases of traumatic surgery of hand and arm.—Senior Surgical Internes.
2. Cases of Tendon and Nerve Repair.—Dr. Torr W. Harmer.
3. Experience with Cholecystography.—Dr. Chester Jones, Dr. John D. Camp.

Physicians, medical students and nurses are cordially invited.

HUNTINGTON HOSPITAL STAFF MEETING

THURSDAY, March 11, 1926, 4:30 P. M., Amphitheatre, Building D, Harvard Medical School.

Dr. Francis Carter Wood of New York will speak on Blair Bell's treatment of cancer.

Dr. John H. Mueller will speak on Gye's work on chicken sarcoma.

Open to the medical profession.

SOCIETY MEETINGS

DISTRICT MEDICAL SOCIETIES

Essex South District Medical Society

Thursday, May 6—Censors meet at Salem Hospital, 3:30 P. M.
Tuesday, May 11—The Tavern, Gloucester. Annual meeting. Speaker to be announced.

Essex North District Medical Society

May 5, 1926—The annual meeting at the Anna Jaques Hospital, Newburyport.

Middlesex East District Society

April 14—At the Harvard Club at 6:30 P. M. Address by Dr. William E. Ladd; subject, "Kidney Affections in Childhood."
May—Annual meeting, Colonial Inn, North Reading. Subject and speaker to be announced.

Suffolk District Medical Society

March 31—At 8:15 P. M. Medical Section. "Some Experiments in Group Physical Examination." Dr. Roger I. Lee.
April 28—At 8:15 P. M. Annual meeting. Election of officers. "Some Diagnostic, Prognostic and Therapeutic Aspects of Disorders of the Blood," Drs. George R. Minot, Cyrus C. Sturgis and Raphael Isaacs.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEW

Pediatric Nursing. A Text-Book for Nurses. By ABRAHAM LEVINSON, B.S., M.D. Lea & Febiger, Philadelphia and New York, 1925.

This short book is a simple outline of the care, feeding and diseases of infants and children in the briefest possible form. The classification is good and the text clear. The only way in which it differs materially from other publications of a similar nature is in the inclusion of chapters describing some of the special problems which may confront the nurse in pediatrics, and the ways in which they should be met.